Investigating student and alumni perspectives on language learning and career prospects through English medium instruction

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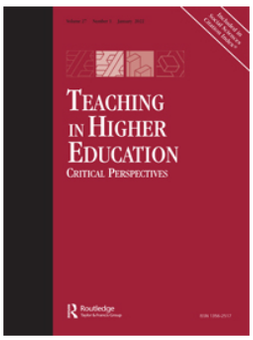

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Investigating student and alumni perspectives on language learning and career prospects through English medium instruction

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ABSTRACT

This study examines the phenomenon of English-medium instruction (EMI) in higher education through the lens of neoliberalism and linguistic entrepreneurship. Although commonly reported benefits of EMI include improved English proficiency and better job opportunities, there is a lack of research critically examining the relationship between EMI and these presumed benefits. Through the lens of linguistic entrepreneurship, this study compares engineering students' perceptions of the linguistic and professional benefits of EMI before, during, and after study in Turkey. Employing a mixed-methods design, data were collected from prospective, current, and former students via questionnaires, interviews, and focus groups. The findings revealed significant differences between groups regarding perceptions of learning and professional outcomes. This paper demonstrates how students' perceptions of EMI are shaped by the ideals of linguistic entrepreneurship and suggests that the professional benefits of EMI may be more nuanced than assumed, with implications for EMI pedagogy and policy in higher education.

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English-medium instruction; neoliberalism; linguistic entrepreneurship; language learning; motivation

Introduction

In recent years, the number of university programs taught through English at higher education institutions (HEIs) has increased due to factors related to the internationalization of higher education (Macaro 2018; Rose and McKinley 2018). Although HEIs may interpret the steps and processes of internationalization in different ways, internationalization is broadly defined as 'the process of integrating an international, intercultural or global dimension into the purpose, functions or delivery of postsecondary education' (Knight 2004, 11). Within the scope of internationalization of higher education, English medium instruction (EMI) is often introduced through top-down policies driven by factors related to globalization and a neoliberal agenda. Given the role of English as a lingua franca, increasingly 'Englishization is seen as a necessary part of

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internationalization' (Rose and McKinley 2018, 126). Although Englishization manifests differently in different higher education contexts (e.g. see Hultgren 2014, in Northern Europe; Kirkpatrick 2017, in Asia-Pacific), the prominence of English can be seen in different areas of university activity including the curriculum, recruitment policies, admission policies, and publishing requirements for academics. EMI is often considered a means through which HEIs can attract international staff and students, prepare students for the global job market, and improve rankings (Galloway, Kriukow, and Numajiri 2017; Wächter and Maiworm 2015), all of which are 'driven by a neoliberal agenda to maximize financial profit' (De Costa, Green-Eneix, and Li 2020). The dominance of English in higher education has led Costa and Coleman (2012, 4) to conclude that 'Englishising the curriculum can be a matter of policy interest, competitiveness and even survival at both national and regional levels, and for individual universities.'

At the individual level, students are increasingly opting to study through English to improve their English language abilities and job opportunities (Galloway, Kriukow, and Numajiri 2017; Galloway and Ruegg 2020). In this sense, EMI has become a means of linguistic entrepreneurship, through which students 'strategically exploit language-related resources' (De Costa, Park, and Wee 2016) to enhance their worth in the global market. While English learning and better career prospects are often cited as reported benefits of EMI, the relationship between these two motivating factors, as well as their relationship to neoliberal policy and the commodification of language education (Flores 2013), has yet to be critically explored in the literature. Using linguistic entrepreneurship as a conceptual lens, this study investigates engineering students' motivations and perceptions of the linguistic and professional benefits of EMI before, during, and after study in Turkey.

Neoliberalism and linguistic entrepreneurship

Discourses of internationalization related to EMI are often entangled with discourses of a neoliberal global economy (De Costa, Green-Eneix, and Li 2020). Neoliberalism can be characterized as a 'philosophy of sustaining entrepreneurial and competition-seeking practices under the umbrella of free markets' (Phan and Barnawi 2015, 546). Although neoliberalism frames the free market as inherently beneficial to society, it has been criticized for perpetuating inequalities (De Costa, Green-Eneix, and Li 2020), promoting linguistic imperialism (Phillipson 2008), and serving the interests of large corporations (Block, Gray, and Holborow 2012). In addition to its dominance at an institutional level, Flores (2013, 503) argues that neoliberalism has also had an impact on the individual language learner through 'the conceptualization of the ideal subject (i.e. what it means to be an ideal human being from a neoliberal perspective)'. Here, Flores argues that the ideal neoliberal subject is the enterprising self, characterized as autonomous, flexible, and continually adapting to the changing needs of the job market. Because English has been characterized as a form of linguistic capital necessary for success in a knowledge-based economy (Li 2013; De Costa, Green-Eneix, and Li 2020), a neoliberal ideology sees language learning as an important indicator of the self-enterprising, ideal subject.

Exploring the relationship between EMI and neoliberal ideology, Piller and Cho (2013, 24) suggest that language education policy is informed by neoliberal values of competition: 'neoliberalism with its imperative to compete is a covert form of language

policy, which imposes English as a natural and neutral medium of academic excellence.' Referring to this 'imperative to compete,' scholars have commented on the language learning behaviors of 'homo economicus,' an entrepreneur in the neoliberal market (Block 2018)—similar to Flores (2013) characterization of the ideal neoliberal subject. De Costa, Park, and Wee (2016, 696) have argued that the neoliberal turn in education has transformed language learning into 'an activity that the learner engages in as a path to better outcomes, such as better employment opportunities.' The neoliberal value of competition is enacted in education through practices such as testing, assessment, and rankings, and it is evident in the policies implemented by HEIs to make themselves more competitive (Piller and Cho 2013). As such, policymakers at both the national and institutional level, as well as program administrators within an HEI, may view the introduction of EMI as a tool to improve the competitiveness of HEIs.

Similarly, language skills may be viewed as an economic resource through which students become more competitive in the global job market. In this context, De Costa, Park, and Wee (2016, 2019) argue that language learners have become linguistic entrepreneurs in their motivations and modes of language learning. They define linguistic entrepreneurship as 'an act of aligning the moral imperative to strategically exploit language-related resources for enhancing one's worth in the world' (De Costa, Park, and Wee 2016, 696). In other words, language learning is increasingly framed as a form of entrepreneurship, by which learners invest in, develop, and portray their language skills as a marketable commodity. In terms of language skills, the value of English in the neoliberal market is unrivaled: 'English is often valorized as the global language par excellence that facilitates global business and economic development' (De Costa, Park, and Wee 2019, 396). As such, the decision to study through English rather than the local language may represent an act of linguistic entrepreneurship through which the individual seeks not only to improve his or her language skills but to maximize his or her earning potential after graduation. However, other research has suggested that students resist the imposition of EMI for sociocultural reasons (Huang 2018), suggesting a gap between official policy and student motivations.

Given the relationship between EMI and neoliberal ideology, this study employs linguistic entrepreneurship as a conceptual lens through which to examine EMI as a motivation and mode of language learning. In doing so, we compare the perceived motivations and benefits of EMI among students before, during, and after study. By taking a comparative approach, we attempt to critically engage with assumptions, grounded in neoliberal ideology, that EMI improves students' employment opportunities because English is the default language of the global economy.

English-medium instruction

In this paper, we consider EMI as 'the use of the English language to teach academic subjects (other than English itself) in countries or jurisdictions where the first language (L1) of the majority of the population is not English' (Macaro 2018, 19). According to this definition, EMI has no explicit language learning aims, nor is language teaching a component of EMI pedagogy. In support of this definition, research has found that explicit language instruction rarely occurs in EMI classes (Jiang, Zhang, and May 2019), and

numerous studies have questioned the effectiveness of EMI for language learning (Hu, Li, and Lei 2014; Kim, Kweon, and Kim 2017; Macaro et al. 2018). Nonetheless, a 'widely purported benefit of EMI is that it kills two birds with one stone … [and] students simultaneously acquire both English and content knowledge' (Rose et al. 2019, 2).

The idea that EMI may improve students' English proficiency often 'comes with the promise of enhanced career prospects' (Xie and Curle 2020, 2). English skills are increasingly viewed as an economic resource to help students compete in the global job market (De Costa, Park, and Wee 2016). In a study in China, Hu, Li, and Lei (2014) found that both teachers and students believed that EMI would enhance students' employment opportunities. Similar findings have been reported in Europe (Wächter and Maiworm 2015) and elsewhere in Asia (Galloway, Kriukow, and Numajiri 2017). However, empirical research has not looked at the supposed relationship between EMI and enhanced employment opportunities from a critical perspective.

Given its assumed professional benefits, understanding the experiences of EMI students and graduates is an essential first step in evaluating the relationship between EMI and students' future careers. Previous studies have noted that 'the perceived benefits of EMI at the … personal level cannot be guaranteed' (Galloway, Numajiri, and Rees 2020, 4) and that research is needed to investigate how stakeholders' views might change over time (Aizawa and Rose 2019). This study responds to those calls by investigating students' perceptions before, during, and after study.

The Turkish context

EMI in Turkish higher education was first introduced in the 1950s with the founding of Middle East Technical University in Ankara (Kırkgöz 2007; Selvi 2014). Language support for EMI programs in Turkey is provided through the preparatory model (see Macaro 2018). The English preparatory program (EPP) is a one-year, intensive English program designed to prepare incoming students for EMI courses. Before starting their EMI classes, students are required to complete the EPP or pass an English proficiency exam—typically an in-house exam prepared by the EPP—to demonstrate sufficient language proficiency. Despite the EPP system and the relatively long history of EMI in Turkey, researchers have questioned the effectiveness of EMI for content learning (Kırkgöz 2014; Sert 2008) and raised concerns about students' English proficiency levels (Ekoç 2020; Kırkgöz 2009).

Despite these concerns, the number of universities offering EMI programs in Turkey has grown in recent years, along with a general expansion in higher education. Through a government-led effort, the number of HEIs in Turkey more than doubled from 2005 to 2019. During this period, 'the higher education system in Turkey changed from that of a selective elitist institution to mass higher education' (Cin, Gümüş, and Weiss 2020, 3). This change in university demographics also expanded access to EMI programs, which have been criticized for 'exacerbate[ing] socioeconomic inequalities in the country' (Selvi 2014, 143). As in other contexts, English skills are often perceived in Turkey as important for career advancement (Kırkgöz 2007). As such, the expansion of EMI programs in higher education warrants an examination not only of how a switch in language of instruction affects learning outcomes but also how individuals respond to the (linguistics) expectations of a globalized economy.

The majority of research on EMI in Turkey has investigated issues related to content and language learning, such as language challenges (Kamaşak, Sahan, and Rose 2021; Kırkgöz 2014), strategy use (Soruç and Griffiths 2018), and motivation (Macaro and Akincioglu 2018). Other scholars have criticized the dominance of English in higher education, invoking themes of linguistic imperialism and raising concerns that EMI is a threat to the local culture and language (see Selvi 2011). Selvi (2020a) argues that grassroot efforts to oppose EMI are embedded in national ideology and a desire to preserve Turkishness against the expansion of English. However, the relationship between the expansion of English in Turkish higher education and the neoliberal economy remains unclear. This study seeks to address this gap by examining the motivations and benefits of EMI through the lens of linguistic entrepreneurship, comparing students' perceptions before, during, and after study.

The study

Aims of the study

De Costa, Park, and Wee (2016, 697) argue that language learning manifests as linguistic entrepreneurship in two ways: (1) the student's motivation for language learning and (2) the student's mode of language learning. Following this framework, the current study draws on these two pillars to investigate prospective, current, and former students' perspectives on EMI as a motivation for and mode of language learning. In other words, the study investigates the role that language learning plays in students' decisions to study EMI and the relationship between language and perceived outcomes of EMI. To this end, we address the following research questions:

1. What are prospective, current, and former EMI engineering students':
    a. motivations for studying through English?
    b. beliefs about the academic benefits and challenges of studying through English?
    c. beliefs about the professional benefits and challenges of studying through English?
    d. self-reported English proficiency levels?
2. How do motivations, beliefs, and self-reported English proficiency compare across the three groups (prospective, current, and former EMI engineering students)?

Methods

This study employed an explanatory sequential mixed-methods design (Creswell et al. 2003), through which data were collected through 408 questionnaire responses, three focus groups with nine participants, and seven interviews. All participants were prospective, current, or former engineering students at Turkish universities. The questionnaires were supported by follow-up interviews and focus groups to provide in-depth qualitative data contextualizing the results of the quantitative analysis. The questionnaire was administered online and consisted of 50 Likert-type scale items, plus demographic questions pertaining to each group. The questionnaire included four sub-scales investigating (1) motivation to choose an EMI engineering department (14 items), (2) perceived academic

benefits and challenges of EMI as a mode of study (20 items), (3) perceived professional benefits and challenges of EMI as a mode of study (12 items), and (4) self-reported English language proficiency skills with respect to reading, writing, listening, and speaking (4 items). While measures of self-reported English proficiency are less reliable than direct measures, we considered this to be the most feasible measure of language proficiency given the diversity of participant groups.

Three separate versions of the questionnaire were prepared for EPP students, EMI department students, and EMI graduates, respectively. The three questionnaires followed the same format and included similar items. However, the tense and wording of the items were adjusted based on the participants' experience with EMI (e.g. 'I will improve/am improving/improved my English skills'). While reporting the results of this study, we have used items from the graduates' version of the questionnaire (e.g. 'I improved my English skills').

The items were developed based on existing questionnaires evaluating EMI students' motivation and challenges (Evans and Morrison 2011; Macaro and Akincioglu 2018). A pilot survey was administered to 85 students enrolled in EMI engineering programs. The questionnaire included items in both English and Turkish to increase the reliability of the responses. After items were prepared in English, one author translated the items to Turkish, and the second author back-translated the items to English to verify consistency in the wording. The pilot survey included two open-ended questions at the end of each subscale asking for feedback on the survey.

Cronbach's alpha was calculated to assess the reliability of the pilot survey, and acceptable values were found for the overall scale ($\alpha = 0.911$) and its sub-scales (motivations, $\alpha = 0.765$; academic challenges, $\alpha = 0.862$; professional challenges, $\alpha = 0.873$). Based on student feedback, one item was deleted from the motivation subscale, which increased the internal consistency of the scale, $\alpha = 0.803$. Moreover, items concerning study abroad (motivation subscale), teachers' use of Turkish (academic challenges subscale), and Turkish in the workplace (professional challenges subscale) were added to the questionnaire following student feedback. The final questionnaires were then made available via an online link which directed participants to the appropriate questionnaire. The link was shared on social media and distributed to EPP and EMI engineering lecturers, who were asked to share the link with their current and former students.

Questionnaire data were analyzed using descriptive statistics and analysis of variance (one-way ANOVA) tests to compare means across groups. Means and standard deviations along with the ANOVA results for each item of the questionnaire can be found in the appendix. Before conducting the analysis, assumptions of normality were checked on the data pertaining to motivations, academic benefits, professional benefits, and self-reported English proficiency. Skewness and kurtosis were found to fall within acceptable ranges (between ±1) for all variables. When the assumption of equal variance was violated according to Levene's test, we reported the adjusted Welch's *F*-ratio. When one-way ANOVA tests revealed significant results, multiple comparisons were carried out using Tukey post hoc tests to identify any differences between groups.

Following the questionnaire, respondents were invited to participate in interviews and focus groups. The focus groups were conducted in person, while the interviews were conducted online following changes in educational policies due to COVID-19. Although

focus groups were originally planned for all participants, interviews were used instead to accommodate participants' schedules once the format of data collection was moved online. The interviews and focus groups were semi-structured in nature and followed a prepared list of questions developed from the themes of the questionnaire. They were audio-recorded and transcribed for analysis in *NVivo 12*. All interviews and focus groups were conducted and analyzed in Turkish, and excerpts reported in this study have been translated by the researchers.

The analysis of focus group and interview data was conducted following the procedures for deductive qualitative content analysis laid out by Selvi (2020b). Because the qualitative data provided supplementary support to and a more nuanced understanding of the main questionnaire data, a deductive approach was taken. Data were analyzed according to themes related to the research questions: motivations for EMI study, academic benefits and challenges, professional benefits and challenges, and English proficiency.

Participants

Participation in the study was voluntary, and participants were informed about the aims of the study before completing the questionnaire. Participants were ensured anonymity in their responses. A total of 416 participants completed the questionnaire. However, due to missing data or invalid responses, 408 responses were analyzed in this study. Data were collected from prospective (n=124), current (n=198), and former (n=86) EMI engineering students in Turkey. Engineering was selected as the focus of investigation because it is an academic discipline commonly taught through English in Turkey, and it is a prestigious subject requiring one of the highest university entrance exam scores (ÖSYM 2020). Moreover, because engineering is an applied science with connections to global industry, it is an appropriate discipline for investigating the link between EMI and students' linguistic needs for their future careers (e.g. communicating with partners in global industry). Table 1 provides a breakdown of the participants within each group.

Prospective students (PREPs) were students who had been accepted to EMI programs but had not yet begun their EMI departmental courses. These students were enrolled in the EPPs of their universities. They would begin their EMI engineering courses after they passed the EPP with a satisfactory level of English.

Current students (DEPTs) were enrolled to 4-year undergraduate EMI programs at universities in Turkey. The department students were in their first (n=45, 22.7%), second (n=50, 25.3%), third (n=63, 31.8%), and fourth (n=40, 20.2%) year of study. All had passed their university's EPP or submitted equivalent English proficiency test scores to participate in EMI classes.

Former students (GRADs) were graduates from EMI engineering departments in Turkey. They had completed their undergraduate studies between 1997 and 2019, with 80.2% of respondents recent graduates (n=69) who had finished their degree between 2015-2019. The majority of EMI graduates did not hold a postgraduate degree (n=63, 73.3%), although 16 respondents (18.6%) had a Master's degree and seven respondents (8.1%) had a PhD. Nearly 80% of graduates (n=67) were employed, and about 5% were engaged in postgraduate study (n=4). The remaining graduates (n=15, 17.4%) were unemployed.

Table 1. Participant demographics by group.

Group	PREP		DEPT		GRAD		Overall	
	n	%	*n*	%	*n*	%	*n*	%
Gender								
Male	91	73.4	150	75.8	56	65.1	297	72.8
Female	33	26.6	48	24.2	30	34.9	111	27.2
University affiliation								
University A	41	33.1	33	16.7	40	46.5	114	27.9
University B	1	0.8	52	26.3	9	10.5	62	15.2
University C	9	7.3	74	37.4	7	8.1	90	22.1
University D	41	33.1	3	1.5	0	0.0	44	10.8
University E	5	4.0	16	8.1	7	8.1	28	6.9
Other	27	21.8	20	10.1	23	26.7	70	17.2
Engineering department (sub-branch)								
Mechanical	37	29.8	99	50.0	29	33.7	165	40.4
Electrical and Electronics	17	13.7	48	24.2	7	8.1	72	17.6
Mechatronics	15	12.1	11	5.6	13	15.1	39	9.6
Metallurgical and Materials	10	8.1	10	5.1	12	14.0	32	7.8
Computer	22	17.7	2	1.0	3	3.5	27	6.6
Civil	4	3.2	6	3.0	6	7.0	16	3.9
Environmental	2	1.6	5	2.5	6	7.0	13	3.2
Industrial	4	3.2	3	1.5	3	3.5	10	2.5
Other	13	10.5	14	7.1	7	8.1	34	8.3
Type of EMI program								
Partial EMI	101	81.5	100	50.5	56	65.1	257	63.0
Full EMI	23	18.5	98	49.5	30	34.9	151	37.0
EMI experience before university								
Yes	21	16.9	33	16.7	14	16.3	68	16.7
No	103	83.1	165	83.3	72	83.7	340	83.3

Focus group discussions (n = 9) were conducted with DEPTs, and interviews were carried out with GRADs (n=3) and PREPs (n=4). Three focus groups were conducted with Mechanical Engineering students from Universities A, B, and C, respectively, the three universities with the highest participation rates in this study. Table 2 summarizes the focus group participants. The three GRADs who participated in interviews were graduates from the Mechanical Engineering department at University A. They had indicated on their questionnaire responses that they were interested in being interviewed, and all three were working full-time as engineers in a major city in Turkey. The four PREPs were also enrolled at University A. All interviewees were male. The unequal gender distribution in focus groups and interviews reflects the tendency of engineering faculties in Turkey to enroll more male than female students.

Table 2. Focus group participants (DEPTs).

	University	Number of students (N=64)	Male (N=59)	Female (N=5)	Year of study	Type of EMI program
FG1	A	7	7	0	1st	Full & Partial
FG2	A	5	4	1	2nd	Full & Partial
FG3	A	9	7	2	3rd	Partial
FG4	B	9	7	2	2nd	Full
FG5	B	6	6	0	2nd	Full
FG6	B	8	8	0	4th	Full
FG7	C	4	4	0	2nd	Partial
FG8	C	8	8	0	4th	Partial
FG9	C	8	8	0	1st	Full

Limitations

Participants may have interpreted the questionnaire items differently. Moreover, self-reported measures of language proficiency are subjective, based on participants' self-assessment, and they should be interpreted as such in this study. While this study sought to address the limitations of questionnaire data through focus groups and interviews, qualitative data were collected from a limited number of participants.

Because this study relied on a convenience sampling method, there are limitations with respect to the sample that may affect the generalizability of the study. For example, the sample includes an unequal distribution of participants according to university and engineering department of study. Differences between groups could reflect differences related to the characteristics of a particular university or sub-field of engineering.

Results

Motivations for EMI

The first part of the questionnaire investigated participants' motivation for EMI study using a 5-point Likert-type scale (ranging from 1 'Strongly disagree' to 5 'Strongly agree'). PREPs, DEPTs, and GRADs reported the same top five motivations (Appendix A), which included finding a job more easily (Item 10), working for an international company (Item 12), believing that it was more prestigious to study in English (Item 5), improving their English skills (Item 6), and keeping up with technological developments in the field (Item 8). These results suggest that, across groups, participants were primarily motivated by the professional gains associated with EMI and a desire to improve their English skills. Participants in interviews and focus groups connected these two themes by emphasizing the importance of English for engineers. One participant stated, '*I knew I would need English because I was studying engineering,*' (GRAD-1) and another added, '*it would be more logical to study engineering in English than learn English after graduating*' (EPP-4). These results suggest that students were motivated to learn English through their EMI programs and perceived EMI as a mode of language learning, which they believed would benefit them in their careers.

A one-way ANOVA was conducted to determine whether there were any differences across the three groups in terms of motivation for EMI study. The results revealed significant differences with respect to two items: university exam ranking (Item 1; Welch's $F(2, 210.268) = 13.141$, $p < .001$) and opportunities to participate in international exchange programs (Item 4; Welch's $F(2, 213.478) = 4.565$, $p = .011$). Post hoc comparisons using the Tukey HSD test indicated that PREPs ($M = 2.88$, $SD = 1.001$) were less motivated by their university exam ranking when selecting EMI programs compared to DEPTs ($M = 3.47$, $SD = 1.125$; $p < .001$) and GRADs ($M = 3.42$, $SD = 1.173$; $p = .002$). Post hoc Tukey tests also revealed that PREPs ($M = 3.82$, $SD = 1.028$) were more motivated by international exchange opportunities than DEPTs ($M = 3.47$, $SD = 1.216$; $p = .022$). No other significant differences were found across groups with respect to motivation for EMI study.

These findings were generally confirmed in the qualitative data. Students in three focus groups stated that they applied to their programs based on their university exam

scores[1] (FG2; FG4; FG7), with one student stating: '*I chose randomly based on my points*' (Student 5, FG2). DEPTs also mentioned factors such as the university's reputation (FG4) and a desire to study a particular branch of engineering (FG7; FG9), regardless of language of instruction. In contrast, all PREPs mentioned opportunities to work and/or study abroad as a main motivation for EMI. In comparison, none of the GRADs interviewed were motivated by opportunities to study abroad, and this theme only emerged in one focus group (FG1). These findings may suggest that motivations change based on the opportunities available to students throughout their EMI programs: none of the DEPTs or GRADs interviewed had participated in international exchange programs.

Academic benefits

The participants were asked to report the extent to which they agreed with perceived academic benefits and challenges associated with EMI (Appendix B). Across groups, participants reported that the top academic benefit of EMI was improved English skills (Item 9). Other benefits included learning engineering terms better in English than in Turkish (Item 10) and having access to English resources (Item 17). One GRAD reported that learning technical terminology in English was '*the most important benefit*' of EMI (GRAD-1), and another GRAD stated that learning content from English textbooks was beneficial because '*sometimes there are no equivalent terms [in Turkish] or translation might cause meaning loss*' (GRAD-3). Two PREPs reported that the availability of online English resources compared to Turkish resources would be an advantage of EMI (PREP-1, PREP-2). Considered through the lens of linguistic entrepreneurship, these findings suggest that students not only perceived EMI as a mode through which to learn (general) English but considered it to be an avenue through which they could develop the discipline-specific language needed for their careers.

In terms of challenges, PREPs reported that EMI would be more time consuming than Turkish-medium instruction (TMI; Item 16) and that they would learn the subject material in less detail compared to TMI classes (Item 14). In contrast, GRADs were less likely than PREPs or DEPTs to report academic challenges related to EMI, although one GRAD stated in an interview that students with lower English proficiency '*sometimes had more difficulty understanding explanations in English*' (GRAD-2). Overall, participants across groups did not think that content was simplified (Item 3) or that academic standards were lower (Item 12) in EMI classes compared to TMI classes.

One-way ANOVA tests were conducted to determine whether there were any differences across the three groups in terms of academic benefits and challenges from EMI. The results revealed significant differences with respect to 11 items. Table 3 presents the results of the post hoc tests for those 11 items.

Significant differences between groups were found with respect to three broad themes: content learning, language learning, and the quality of EMI compared to TMI. With respect to content learning, PREPs were more likely than DEPTs or GRADs to agree that academic content was simplified and that academic standards were lowered because the language of instruction was English; they were also more likely to agree that content could be learned in more detail in the L1. Moreover,

Table 3. Post hoc test results for academic benefits and challenges.

Item	Group (I)	Group (J)	Mean difference (I – J)	Std. Error	Sign.	Direction
3. University teachers in my department simplified the content because the language of instruction was English	PREP	DEPT	.621*	.127	< .001	PREP > DEPT
		GRAD	.494*	.157	.005	PREP > GRAD
5. It made me feel distinguished	PREP	DEPT	.376*	.128	.010	PREP > DEPT
		GRAD	.108	.157	n.s.	
7. The English-language lessons were more interesting than Turkish-language lessons	PREP	DEPT	.400*	.124	.004	PREP > DEPT
		GRAD	.078	.152	n.s.	
8. The English-language lessons were more motivating than Turkish-language lessons	PREP	DEPT	.379*	.120	.005	PREP > DEPT
		GRAD	.116	.147	n.s.	
9. I improved my English skills	PREP	DEPT	.324*	.101	.004	PREP > DEPT
		GRAD	.055	.124	n.s.	
12. The academic standards in my department were lower because the language of instruction was English	PREP	DEPT	.470*	.113	< .001	PREP > DEPT
		GRAD	.250	.139	n.s.	
14. If the language of instruction had been Turkish, I could have learnt the subject material in more detail	PREP	DEPT	.383*	.135	.013	PREP > DEPT
		GRAD	.721*	.165	< .001	PREP > GRAD
15. I had no difficulty understanding the subject material in English	PREP	DEPT	-.311*	.120	.027	DEPT > EPP
		GRAD	-.552*	.147	.001	GRAD > EPP
16. I spent more time on my studies because the language of instruction in my department was English	PREP	DEPT	.510*	.125	< .001	PREP > DEPT
		GRAD	.495*	.153	.004	PREP > GRAD
17. I had enough resources in English	PREP	DEPT	-.161	.114	n.s.	
		GRAD	-.461*	.140	.003	GRAD > PREP
19. If the language of instruction were Turkish, I could have participated more actively in the lessons	PREP	DEPT	.435*	.133	.003	PREP > DEPT
		GRAD	.847*	.163	< .001	PREP > GRAD
	DEPT	GRAD	.412*	.150	.017	DEPT > GRAD

*Significant at the 0.05 level; For all items, N = 408 (PREP, n = 124; DEPT, n = 198; GRAD, n = 86).

significant differences were found between groups with respect to participation in EMI classes, with PREPs more likely to report that English limited class participation than DEPTs or GRADs. Together, these findings suggest that DEPTs and GRADs found the quality of content learning to be better than expected by PREPs, and they suggest that the quality of content learning is not necessarily reduced in EMI programs, contrary to concerns raised in the literature (Hu, Li, and Lei 2014; Sert 2008). However, PREPs were more likely to agree that English skills were (or would be) improved through EMI study than DEPTs, suggesting that the linguistic benefits of EMI may be modest. The issue of language learning is discussed in Section 3.4

Table 4. Post hoc results for professional benefits and challenges.

Item	Group (I)	Group (J)	Mean difference (I – J)	Std. Error	Sign.	Direction
1. I had an advantage over graduates from Turkish-language departments in terms of finding a job.	PREP	DEPT	-.114	.104	n.s.	
		GRAD	.380*	.127	$p = .008$	PREP > GRAD
	DEPT	GRAD	.495*	.117	$p < .001$	DEPT > GRAD
3. I earn a higher salary than graduates from Turkish language departments.	PREP	DEPT	.139	.110	n.s	
		GRAD	.529*	.135	$p < .001$	PREP > GRAD
	DEPT	GRAD	.390*	.124	$p = .005$	DEPT > GRAD
8. My company is more likely to send me to international professional fairs.	DEPT	GRAD	.300*	.099	$p = .008$	DEPT > GRAD
10. I do not understand engineering concepts as well as my colleagues who graduated from Turkish-language departments.	PREP	DEPT	.363*	.124	$p = .010$	PREP > DEPT
		GRAD	.428*	.152	$p = .014$	PREP > GRAD
12. I have difficulty expressing engineering terms in Turkish while communicating with other employees who do not know English.	PREP	DEPT	-.314*	.126	$p = .035$	PREP < DEPT
		GRAD	-.202	.154	n.s	

*Significant at the 0.05 level; For all items, N = 408 (PREP, n = 124; DEPT, n = 198; GRAD, n = 86).

Professional benefits

Participants were asked to indicate the extent to which they agreed with professional benefits and challenges of EMI (Appendix C). Across groups, participants agreed that they were (or would be) more confident as engineers (Item 6), better able to find jobs at international companies (Item 7), and more likely to be sent abroad by their company (Item 8) because they had studied in English. Participants also agreed that knowledge of English engineering terms would be helpful in their professional lives (Item 9). Moreover, participants across groups disagreed that they would have trouble expressing terms in Turkish (Item 12) and did not believe that colleagues who studied in TMI programs would understand engineering concepts better than they would (Item 10). These findings suggest that PREPs, DEPTs, and GRADs considered the professional benefits of EMI in terms of a globalized economy, centering on international corporations and transnational business activity.

One-way ANOVA tests were conducted to determine whether differences existed between groups in terms of their perceived professional benefits of EMI. The results indicated significant differences for six items. Table 4 presents the post hoc test results.

These results suggest that GRADs were less optimistic about the professional benefits of EMI than DEPTs or PREPs. GRADs were less likely than other groups to report that they had an advantage finding a job or earning a higher salary. In interviews, PREPs tied the professional benefits of EMI to English skills. One PREP summarized: '*Knowing English is more advantageous in terms of job opportunities. If English-speakers can find a job more easily, they can also earn more money*' (PREP4). Similarly, DEPTs across focus groups asserted the importance of English for their future engineering careers, with some students noting that applicants were required to sit English exams during the hiring process (FG3). In contrast, GRADs portrayed a more nuanced explanation of the professional benefits of EMI. They stated that employers prioritized applicants with English skills but stopped short of

agreeing that EMI led to better job prospects. Instead, they stated that English skills opened opportunities to positions with better benefits. One GRAD explained:

> I need to speak English in the department where I currently work; that's what I was hired for. But an engineer who works in production doesn't need to know English. That's why there's a salary difference between us, I mean, because we work in different departments. So, because I know English I'm in a different department, and we earn higher salaries here. (GRAD1)

This difference was echoed by another graduate who was working in production (GRAD2) and stated that he did not earn a high salary and that his English skills were not good.

While these findings suggest that English skills may lead to greater employment opportunities, they also suggest that the perceived professional benefits of EMI may not be realized according to PREPs' or DEPTs' expectations. Instead, the professional benefits of EMI might be relatively modest and dependent on an individual's English skills. These findings are in line with the notion of the ideal neoliberal subject as the enterprising self who takes responsibility for his own language learning (Flores 2013). Although they did not report a straightforward connection between EMI and improved employment opportunities, GRADs did not perceive themselves to be at a professional disadvantage compared to TMI graduates, suggesting no professional cost associated with EMI programs. These findings echo those with respect to quality of content learning.

English proficiency

Finally, participants were asked to self-assess their English proficiency from beginner (1) to advanced (5) on a 5-point Likert-type scale with respect to reading, writing, speaking, and listening. For each of the four skills, PREPs ranked their proficiency lowest and GRADs ranked their proficiency highest among the three groups. Across groups, participants ranked reading as their strongest skill and speaking as their weakest skill.

One-way ANOVA tests were conducted to determine whether differences existed across the three groups. The results revealed significant differences between groups for each of the four skills (Appendix D). Post hoc tests were conducted to compare groups (Table 5), and the results revealed significant differences between the self-reported English proficiency of PREPs and DEPTs and between PREPs and GRADs. For each of the four skills, DEPTs and GRADs rated their English proficiency significantly higher than PREPs. No differences were found between DEPTs and GRADs.

Table 5. Post hoc results for English proficiency.

Item	Group (I)	Group (J)	Mean difference (I – J)	Std. Error	Sign.	Direction
Reading	PREP	DEPT	-.508*	.087	.000	DEPT > PREP
		GRAD	-.724*	.107	.000	GRAD > PREP
Writing	PREP	DEPT	-.314*	.099	.005	DEPT > PREP
		GRAD	-.556*	.122	.000	GRAD > PREP
Speaking	PREP	DEPT	-.596*	.110	.000	DEPT > PREP
		GRAD	-.781*	.134	.000	GRAD > PREP
Listening	PREP	DEPT	-.932*	.111	.000	DEPT > PREP
		GRAD	−1.105*	.136	.000	GRAD > PREP

*Significant at the 0.05 level; For all items, N = 408 (PREP, n = 124; DEPT, n = 198; GRAD, n = 86).

These results suggest that EMI programs may be effective in terms of improving students' English skills.

However, language learning gains after students have completed the EPP (e.g. through EMI classes) might be limited since no statistically significant differences were found between DEPTs and GRADs. In other words, it is possible that students' greatest English language learning gains were achieved through the EPP, in which PREPs were enrolled, and that language development through EMI (e.g. after completing the EPP) was minimal. In some focus groups, DEPTs were pleased with the quality of their EPP education (FG1, FG2), while DEPTs in other focus groups criticized the EPP's orientation toward grammar teaching (FG7, FG8). Across focus groups, DEPTs reported learning vocabulary in their EMI classes, particularly with respect to technical terms. However, some DEPTs (FG1, FG5) reported a lack of opportunity to practice speaking in EMI classes: '*Last year [in EPP] we had debates; the teachers were making us speak there. Last year our [EPP] classes were oriented to speaking but now they're oriented to listening*' (Student 3, FG1). In interviews, GRADs also agreed that there were limited opportunities to improve their speaking skills in EMI classes. While all three GRADs stated that their listening skills improved through EMI study, only one GRAD stated that his speaking skills improved. However, he credited this improvement to his own efforts, invoking notions of the enterprising self:

> Let me first say this, this is not just about the English classes I took in the department. I was determined to improve my speaking skills, and I did so by participating in class and asking the teachers questions; I developed my speaking by chatting with international friends in my daily life. (GRAD1)

Another GRAD stated that 'there was a decrease in my speaking skills when I graduated, compared to the end of the EPP, but an increase in listening and reading' (GRAD2). These findings suggest that EMI students may improve their receptive skills more than their productive skills (Yang 2015), but that language development may be limited without extra effort. In contrast, all four PREPs interviewed were optimistic about the potential of EMI as a mode of language learning, especially with respect to speaking. One PREP stated, 'My speaking skills might develop. Other than that, I don't know if my listening skills will develop but I believe my speaking and writing skills will develop more' (PREP3). These findings suggest a contrast between PREPs' expectations for English learning through EMI and GRADs' reported experiences.

Discussion

Language learning appeared to be both a motivation (Galloway, Kriukow, and Numajiri 2017; Galloway and Ruegg 2020) and an outcome of EMI in this study according to the participants, although the professional benefits of EMI were found to be a stronger motivation than language learning across all three groups. Viewed through the lens of linguistic entrepreneurship, the findings of this study suggest that students chose EMI programs because they believed that investing in their English skills would lead to better career opportunities. However, the findings also suggest that the relationship between EMI and professional gain was complex and subtle: GRADs stated in interviews

that, while English skills may open a diversity of career paths unavailable to non-English speakers, the supposed professional benefits of EMI were not automatically bestowed on (all) EMI graduates. Rather, additional investment in one's English skills appeared necessary to secure the perceived professional benefits of EMI. In other words, choosing an EMI program may signal to employers that an applicant has invested in his or her English skills, but the decision to study through EMI is not enough: in line with the ideal neoliberal subject as the enterprising self (Flores 2013), linguistic entrepreneurship requires continual investment in one's linguistic skills, and—without ongoing support in EMI programs—students may have to study independently in order to achieve the English proficiency expected by prospective employers.

Given these findings with respect to the enterprising self and increased professional opportunities, the question remains as to how effective EMI is as a mode of language learning. As Macaro (2018) notes, research on language learning in EMI has not demonstrated that it outperforms EFL classes when factors such as prior language competence and instructional time are considered. Although significant differences were found in the self-reported English proficiency of PREPs and other groups, in interviews GRADs reported modest language learning benefits, particularly with respect to productive skills, and cast doubt on the effectiveness of EMI classes for language learning. These findings are in line with previous research in other contexts which has suggested that EMI results in modest language learning gains (Kim, Kweon, and Kim 2017; Yang 2015). Moreover, the role of the EPP system in Turkey complicates the relationship between EMI and differences in self-reported English proficiency across groups. No significant differences were found between DEPTs and GRADs, suggesting that, in the Turkish context, students' English proficiency might improve through the EPP but that English improvement through EMI classes (e.g. after the EPP) might be limited. This suggests that the preparatory system may be an effective way to improve students' proficiency before EMI study, despite research which has criticized EPPs for not adequately preparing students for EMI study (Ekoç 2020; Kırkgöz 2009). In order to support further improvements in students' language skills, universities offering EMI programs—regardless of whether they offer a preparatory program—would benefit from offering additional English language classes throughout students' EMI study. Discipline-specific language courses could also help students learn content knowledge better by decreasing the linguistic burdens associated with EMI subject material. Furthermore, EMI content teachers should be encouraged to implement pedagogies that include more practice in speaking and writing in English to increase the effectiveness of EMI for language learning, particularly for productive skills, and professional development activities should be offered to develop such pedagogical practices. The findings of this study suggest that the greatest linguistic benefits associated with EMI may be achieved through 'lifelong training that is monitored by the students/workers themselves' (Flores 2013, 512), as in the case of GRAD1 who pursued opportunities to improve his English skills outside of class. In other words, viewed through the lens of linguistic entrepreneurship, these findings suggest that EMI perpetuates narratives of the neoliberal subject who works to increase his or her own worth on the global market. Additional English language support classes would decrease the pressure on students to work perpetually to improve their English skills by themselves—and perhaps challenge narratives that glorify the self-enterprising neoliberal subject. In this way, the linguistic benefits

of EMI may be repositioned as a fundamentally cooperative activity between students and teachers to support language development rather than as a competitive activity for economic advancement.

The professional benefits of EMI require further interrogation. Although improved employment opportunities are a commonly cited benefit of EMI programs worldwide (Hu, Li, and Lei 2014; Wächter and Maiworm 2015), the results of this study suggest that the professional benefits of EMI may be more nuanced than often assumed. GRADs were less likely to agree that EMI was beneficial in terms of finding a job or receiving a higher salary, compared to PREPs and DEPTs. Nearly 20% of GRADs who responded to the questionnaire were unemployed, which may have contributed to their more sober attitudes with respect to securing a job. These findings highlight that EMI perpetuates a neoliberal myth associating English education with economic prosperity. While EMI may serve as a signaling mechanism to future employers, indicating that students have invested in their English skills, EMI alone is insufficient to secure economic stability. Rather, the linguistic entrepreneur is expected to strive continuously towards improving his or her worth in the world.

This study investigated students' perceptions before, during, and after study, and found that students were more positive about the quality of content learning during and after study than they expected it to be before entering their EMI classes. However, the findings also suggest that students' expectations of language learning through and professional gains because of EMI programs may not be realized. By investigating students' perceptions at three stages, this study was able to demonstrate the ways in which students' expectations of EMI changed based on their experiences studying through English. Given the modest language learning gains through EMI found in this study, along with evidence suggesting that students still need to act as self-enterprising language learners to achieve the career benefits they expected from EMI programs, the findings also challenge assumptions of why EMI programs are or should be offered, both in Turkey and other contexts. Policymakers and program administrators should critically (re)consider decisions to promote EMI at the expense of L1/local language medium of instruction programs, particularly if students' English skills could be supported through discipline-specific language courses while also avoiding a situation of domain loss (Hultgren 2014) in terms of scientific development in the local language.

Conclusion

This study compared three groups of participants at different stages in their EMI experience through the lens of linguistic entrepreneurship and neoliberalism. The findings have suggested that the professional benefits of EMI may be more nuanced than expected or assumed. These findings have implications for practitioners, policymakers, and program administrators across higher education contexts. While these stakeholders often consider introducing or expanding EMI programs in order to produce more competitive graduates for the global market, our findings have suggested that the link between EMI and professional success is more nuanced than neoliberal assumptions of language learning assume, and that the neoliberal assumptions underlying the decision to introduce EMI should be critically evaluated. Moreover, the findings suggest that additional language support classes along with appropriate pedagogies for integrating language learning

may be necessary to achieve the supposed linguistic benefits of EMI. As the number of EMI programs continues to grow, more empirical research is needed to understand the potential professional benefits of EMI programs and to interrogate the assumption that EMI improves employability. If a main motivation for choosing EMI programs is enhanced career prospects, as was found in this study and others (Galloway, Kriukow, and Numajiri 2017; Hu, Li, and Lei 2014), limited professional benefits after graduation—as well as limited improvement in English skills—may lead to dissatisfaction among EMI graduates and require a more realistic evaluation of the justification for EMI programs. Such re-evaluation would require more critical treatment of the implicit neoliberal agenda associated with many EMI policies, which appear to perpetuate the notion of the self-enterprising neoliberal subject without offering students adequate support to achieve their educational, linguistic, and professional goals.

Note

1. Admission to undergraduate university programs in Turkey is based on students' scores from a national university entrance exam, *Yükseköğretime Geçiş Sınavı (YGS*). Students submit preferences for university programs based on their points and rank from the exam, and the Measuring, Selection and Placement Center (*Ölçme, Seçme, Yerleştirme Merkezi, ÖSYM*)—the central body which administers the exams—places students into university programs.

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Appendices

Appendix A. Motivations for EMI study across groups (I chose to study in an English-language engineering department because …)

Motivation items	PPEP[a]		DEPT[b]		GRAD[c]		ANOVA
	Mean	*SD*	*Mean*	*SD*	*Mean*	*SD*	*(Welch's F)*
1. My university exam ranking was high.	2.88	1.00	3.47	1.13	3.42	1.17	$F(2, 210.268) = 13.141$, $p < .001$
2. My family wanted me to study engineering in an English-language department.	3.01	1.29	2.94	1.30	3.17	1.16	n.s
3. My high school teachers told me to do so.	2.48	1.22	2.52	1.20	2.62	1.19	n.s
4. I thought I would benefit from international student exchange programs like Erasmus more easily.	3.82	1.03	3.47	1.22	3.47	1.21	$F(2, 213.478) = 4.565$, $p = .011$
5. I thought that studying at an English-language engineering department would be more prestigious.	4.31	0.89	4.35	0.84	4.21	0.92	n.s
6. I wanted to improve my English skills.	4.26	0.91	4.23	0.96	4.37	0.77	n.s
7. I wanted to access engineering resources in English.	4.02	0.99	4.15	1.01	4.06	0.96	n.s
8. I thought that I could keep up with the technological developments in my field more easily.	4.10	1.01	4.28	0.87	4.28	0.75	n.s
9. I thought that I could communicate with professional colleagues abroad.	3.98	0.95	4.06	0.95	4.02	0.98	n.s
10. I thought that I would be able to find a job more easily.	4.31	0.896	4.52	0.67	4.43	0.73	n.s
11. I thought that I would be able to find higher paid jobs.	3.99	0.99	4.22	0.85	4.06	0.89	n.s
12. I thought that it would be easier for me to work in international companies.	4.31	0.88	4.39	0.73	4.35	0.88	n.s
13. I wanted to work abroad.	3.80	1.15	3.73	1.19	3.45	1.16	n.s
14. I wanted to continue with graduate education (e.g. MA, PhD).	3.45	1.02	3.51	1.11	3.56	1.22	n.s

[a]n = 124; [b]n = 198; [c]n = 86

Appendix B. Academic challenges and benefits across groups (I studied in an English-language engineering department and I think …)

Items	PREP[a]		DEPT[b]		GRAD[c]		ANOVA[d]
	Mean	*SD*	*Mean*	*SD*	*Mean*	*SD*	
1. University teachers in my department had the necessary language skills to teach in English.	3.60	1.02	3.42	1.07	3.50	1.05	n.s.
2. University teachers in my department were more qualified than the teachers in Turkish-language departments.	3.24	1.08	3.34	1.10	3.26	1.01	n.s.
3. University teachers in my department simplified the content because the language of instruction was English.	3.00	1.05	2.38	1.13	2.51	1.14	$F(2, 206) = 12.990$, $p < .001$
4. Compared to Turkish-language lessons, I received a higher level of education in English.	3.16	1.01	3.23	1.10	3.19	1.08	n.s.
5. It made me feel distinguished.	3.49	1.08	3.12	1.16	3.38	1.07	$F(2, 405) = 4.722$, $p = .009$
6. It made me feel like I was part of an elite group.	2.98	1.18	2.69	1.26	3.00	1.09	n.s.
7. The English-language lessons were more interesting than Turkish-language lessons.	3.22	1.05	2.82	1.12	3.14	1.05	$F(2, 405) = 6.002$, $p = .003$
8. The English-language lessons were more motivating than Turkish-language lessons.	3.08	1.01	2.70	1.08	2.97	1.03	$F(2, 405) = 5.393$, $p = .005$
9. I improved my English skills.	4.22	0.68	3.89	0.98	4.16	0.91	$F(2, 216) = 6.364$, $p = .002$
10. I learnt engineering terms better in my English-language lessons compared to Turkish-language lessons.	3.60	1.10	3.62	1.15	3.91	1.08	n.s.
11. It was easier to understand conceptual knowledge in my English lessons compared to Turkish lessons.	3.15	1.05	2.90	1.18	3.09	1.11	n.s.
12. The academic standards in my department were lower because the language of instruction was English.	2.54	1.01	2.07	0.98	2.29	0.98	$F(2, 405) = 8.662$, $p < .001$
13. If the language of instruction had been Turkish, the difference in students' academic achievement would have been less in my department.	3.11	1.05	3.08	1.02	2.90	0.93	n.s.
14. If the language of instruction had been Turkish, I could have learnt the subject material in more detail.	3.60	1.02	3.22	1.28	2.88	1.16	$F(2, 219) = 11.401$, $p < .001$
15. I had no difficulty understanding the subject material in English.	3.25	0.96	3.56	1.16	3.80	0.91	$F(2, 229) = 9.187$, $p < .001$
16. I spent more time on my studies because the language of instruction in my department was English.	3.88	0.93	3.37	1.18	3.38	1.08	$F(2, 218) = 10.932$, $p < .001$
17. I had enough resources in English.	3.60	0.96	3.76	1.06	4.06	0.87	$F(2, 225) = 6.633$, $p = .002$
18. The university had enough resources in English.	3.44	0.97	3.70	1.07	3.66	1.06	n.s.
19. If the language of instruction were Turkish, I could have participated more actively in the lessons.	3.56	1.02	3.12	1.26	2.71	1.11	$F(2, 405) = 13.876$, $p < .001$
20. In my English-language lessons, my teachers provided explanations in Turkish.	3.45	0.96	3.64	0.99	3.64	0.96	n.s.

[a]$n = 124$; [b]$n = 198$; [c]$n = 86$

[d]Welch's adjusted F-ratio reported for items 3, 9, 14, 15, 16, and 17.

Appendix C. Beliefs about professional benefits and challenges (As a graduate of an English-language engineering department, I think …)

Items	PREP[a]		DEPT[b]		GRAD[c]		ANOVA[d]
	Mean	*SD*	*Mean*	*SD*	*Mean*	*SD*	
1. I had an advantage over graduates from Turkish-language departments in terms of finding a job.	4.11	0.895	4.23	0.815	3.73	1.111	F(2, 193.242) = 6.915, $p = .001$
2. I am a better engineer than graduates from Turkish-language departments.	3.52	1.085	3.49	1.036	3.27	1.022	n.s.
3. I earn a higher salary than graduates from Turkish language departments.	3.75	0.861	3.61	0.969	3.22	1.078	F(2, 405) = 8.006, $p < .001$
4. I am more likely to be promoted in my job than graduates from Turkish-language departments.	3.90	0.923	3.87	0.878	3.67	1.045	n.s.
5. My employer values my work.	3.54	0.878	3.55	0.893	3.80	0.749	F(2, 223.085) = 3.646, $p = .028$
6. I am more confident as an engineer.	3.97	0.864	3.91	0.894	3.85	0.833	n.s.
7. I can find/found a job at an international company more easily.	4.15	0.871	4.16	0.821	3.98	0.854	n.s.
8. My company is more likely to send me to international professional fairs.	4.18	0.893	4.32	0.681	4.02	0.767	F(2, 405) = 4.785, $p = .009$
9. The engineering terms that I learnt in my English-language lessons help me in my current job.	4.22	0.842	4.29	0.742	4.16	0.866	n.s.
10. I do not understand engineering concepts as well as my colleagues who graduated from Turkish-language departments.	2.74	1.118	2.38	1.063	2.31	1.077	F(2, 405) = 5.501, $p = .004$
11. I actively use English on a daily basis in my job.	3.42	0.912	3.26	0.946	3.56	1.252	n.s.
12. I have difficulty expressing engineering terms in Turkish while communicating with other employees who do not know English.	2.98	1.067	3.30	1.116	3.19	1.112	F(2, 405) = 3.109, $p = .046$

[a]n = 124; [b]n = 198; [c]n = 86
[d]Welch's adjusted F-ratio reported for items 1 and 5.

Appendix D. Self-reported English proficiency by group (Please describe your English language skills with respect to four sub-skills: reading, writing, speaking, and listening.)

English skill	PREP[a]		DEPT[b]		GRAD[c]		ANOVA[d]
	Mean	*SD*	*Mean*	*SD*	*Mean*	*SD*	
Reading	3.53	0.770	4.04	0.792	4.26	0.672	F(2, 405) = 26.859, $p < .001$
Writing	3.36	0.859	3.68	0.882	3.92	0.843	F(2, 405) = 10.936, $p < .001$
Speaking	2.74	0.918	3.34	0.993	3.52	0.930	F(2, 405) = 21.143, $p < .001$
Listening	2.79	1.022	3.72	0.987	3.90	0.826	F(2, 347.293) = 48.333, $p < .001$

[a]n = 124; [b]n = 198; [c]n = 86
[d]Welch's adjusted F-ratio reported for Listening.