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Predictors of English Medium Instruction academic success: English proficiency versus First language medium

Abstract

This article reports a mixed-methods study that examined academic success in an Economics programme at a public university in Turkey. Test score data from English Medium Instruction (EMI) and Turkish Medium Instruction (TMI) courses and general English proficiency (GEP) scores were collected from fourth-year students (n=159). Follow-up semi-structured interviews were conducted with 12 students. Results showed that general English Proficiency was not a statistically significant predictor of EMI academic success. TMI academic success, however, *did* significantly predict success in EMI. This result illustrates that EMI success is better augmented by students taking some courses through their native language alongside EMI courses. A Multilingual Model (a hybrid rather than a purist model) of EMI implementation is therefore supported. Qualitative data also supported this as students affirmed this possible mediatory influence of first language courses on their EMI academic success. Suggestions for future research as well as practical pedagogical implications are provided.

Key words: English medium instruction (EMI); Academic Success; Turkish Medium Instruction (TMI); General English Proficiency (GEP); Higher Education (HE); Economics

Introduction

Across the world, although plurilingualism is often favoured as the ideal (Doiz, Lasagabaster, & Sierra, 2012, p. xvii), the medium of English is increasingly being used to teach and learn academic subjects in higher education (HE. Dearden & Macaro, 2016; Wächter & Maiworm, 2014). This phenomenon, known as English Medium Instruction (EMI), is defined here 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, p. 19). This exponential growth of EMI is occurring not only in ex-colonised countries, but also in countries such as Turkey where English is neither historically important nor an official language.

Possible reasons for the expansion of EMI include; enhanced career prospects (Huang, 2011), improved English proficiency (Galloway, Kriukow & Numajiri, 2017), and an attempt to develop internationally-minded university students and staff (Rose, Curle, Aizawa, & Thompson, 2019). Empirical evidence for this rationale, however, is still lacking.

Nevertheless, research into this change in the medium of instruction (MOI) has expanded rapidly over the last 15 years (Macaro, Curle, Pun, An, & Dearden, 2018); dominated by studies of teacher and student beliefs about EMI (Cho, 2012; Hu, Li, & Lei, 2014; Kırkgöz, 2009). There is also growing research interest in EMI academic success (Li, 2018; Rose et al., 2019; Terraschke & Wahid, 2011; Xie & Curle, 2020); however, no studies have examined success in Turkey. This study fills this research gap by exploring the potential association between EMI academic success, Turkish Medium Instruction (TMI) academic success, and general English proficiency (GEP). Interview data then provide supporting evidence for these quantitative findings. Practical implications for policymakers and EMI

implementation are also provided so as to support student learning and foster EMI academic success.

Literature Review

EMI in Turkey

Although Turkish higher education (HE) has witnessed an exponential growth of EMI programmes over the last decade (West, Guven, Parry, & Ergenekon, 2015), the notion of teaching academic subjects through English in HE is not new in Turkey. It is among a few monolingual countries that, despite not having a colonial past, have adopted English as the medium of instruction (MOI) in HE. Robert College in Istanbul, since renamed Bogazici University, is the oldest American school established (in 1863) outside the United States (Minifie, 1998). Middle East Technical University, established in Ankara in 1956, was also one of the first universities in Turkey to deliver HE programmes through English. Given this long history, the debates surrounding the effectiveness and success of EMI are long established in Turkey.

Although some studies have investigated the motivation of EMI students in Turkey (Kırkgöz, 2005; Turhan & Kırkgöz, 2018), the strategies they use to deal with difficulties (Soruç & Griffiths, 2018; Soruç, Dinler, & Griffiths, 2018), and the expectations of Turkish lecturers (Inan, Yuksel, & Gurkan, 2012); few studies have investigated EMI academic success in the Turkish context. By examining the relationship between the students' EMI academic success, TMI success, and general English proficiency, this study contributes to the growing literature on academic success in EMI.

English Proficiency and EMI Academic Success

Previous research studies have explored the predictive role of English language proficiency and EMI academic success. In the Japanese HE context, Rose et al. (2019) found English proficiency to be a statistically significant predictor of success in EMI International Business. A similar result was also found in (Xie & Curle, 2020) in the Chinese EMI context. Both of these studies used measures of academic/content-related English proficiency rather than general English proficiency. In Rose et al.'s (2019) study, English proficiency was measured using the Test of English for International Communication (TOEIC) and an end-of-term score on students' English for Specific Purposes (ESP) course. TOEIC assesses 'English-language skills needed in the workplace' (TOEIC, 2020), rather than every day, general English. The ESP course developed students' academic skills which supported their business content learning, again highlighting a focus on academic/content-related English. Xie and Curle (2020) also measured academic/content-related English proficiency; 'Business English proficiency' measured student's communicative competence in the business context. The study reported in this article makes an original contribution to knowledge by using a true measure of general English proficiency; an end-of-term score obtained using an adapted version of the Cambridge Preliminary English Test (PET). This is a B1 preliminary qualification that measures mastery of the basics of English and practical language skills *for everyday use* (Cambridge PET, 2020).

The role of the L1 in EMI

The implementation of EMI is complex (Macaro et al., 2018). Macaro (2018) outlines five different models adopted in higher education. One of the more complex models is that of the ‘The Multilingual Model’ where some sessions are taught through English and some sessions through the first language (L1). This model has been used in China (Wu, 2006), Hong Kong (Pun & Macaro, 2019), Indonesia (Simbolon, 2017), Japan (Macaro et al., 2018), Sweden (Malmström, Pecorari, & Gustafsson, 2016; Pecorari, Shaw, Irvine, & Malmström, 2011), Taiwan (Chou, 2018), Vietnam (Phuong & Nguyen, 2019), and the current study context of Turkey (Soruç et al., 2018). When the issue of L1 use in EMI programmes has been researched, studies have focused on the frequency (Butzkamm, 1998; Macaro, Tian, & Chu, 2020; Wannagat, 2007), the functions (Haroon, 2005; Luk & Lin, 2015; Tarnopolsky & Goodman, 2012) or students’ and teachers’ perceptions on it (Airey, 2012; Bolton & Kuteeva, 2012; Karakas, 2016; Kim, Kweon, & Kim, 2017; Kırkgöz, 2014). To date, no studies have explored the impact and influence of courses instructed in the L1 on EMI academic success. This study aims to fill this research gap.

Theory of the Transfer of Language-Independent Knowledge

The concept of linguistic transfer (Odlin, 1989; 2012) is often researched in the field of second/foreign language teaching and learning. This includes the transfer of skills such as reading (Chung, Chen & Geva, 2019), writing (Manchón, 2013) and literacy (Cummins, 2017; Durgunoglu, 2002). Few studies, however, have focused on the transfer of information (Brooks, & Danserau, 1987) or knowledge (Olivares, 2002) from one language to another on language-independent concepts. Olivares (2002) categorises the transfer of language-independent features into specific and general. Specific transfer of declarative knowledge from the first language (L1) to the second language (L2) refers to changing labels to

information. According to Cummins (2017), this is called “transfer of conceptual elements” (p. 106); such as understanding the concept of Photosynthesis in the L1, this is then transferred to the L2 when needed. General transfer of procedural and strategic knowledge from L1 to L2 deals with the processes and cognitive, affective and metacognitive strategies. Cummins (2017) refers to this concept as “transfer of metacognitive and metalinguistic learning strategies” (p. 107). Example strategies are; visualising, using graphic organisers, mnemonic devices, and vocabulary acquisition strategies. However, while discussing these transfer types, Cummins (2017) acknowledges that the cognitive characteristics of individuals might also be a factor that needs to be considered along with transfer, as these are “two sides of the same coin” (p. 107).

To transfer knowledge from content in one language to another is regarded to be one of the most critical abilities for students to cultivate, because “transfer of background knowledge in L1 enables students to perform academically in L2” (Olivares, 2002, p. 14). A study by Dong (2002) revealed that transferring content (i.e., Biology) knowledge from their L1 encouraged high school ESL students both to continue learning the subject matter and develop their proficiency in the new language. This present study innovatively applies this theory of the Transfer of Knowledge to the EMI context when investigating the role of TMI academic success in EMI academic success.

Methodology

The current study addresses the following research questions:

- (1) Does general English proficiency predict EMI academic success?
- (2) Does TMI academic success predict EMI academic success?

(3) What are students' perceptions of the impact of English language proficiency and success in TMI courses on their EMI academic success?

Context of the Study

As previously discussed, Turkish universities offer two types of EMI programmes: full and partial EMI. This study focused on a partial EMI programme, or a 'Multilingual Model' of EMI (Macaro, 2018), where students were required to take a minimum of two EMI courses per semester. The university in focus was a major public university in Turkey with more than 50,000 students that offers EMI courses in 13 different programmes across the Science, Engineering and Economics faculties. It was deemed desirable to research a single academic subject in order to avoid possible subject-related confounding variables (see Margić & Vodopija-Krstanovic, 2016), therefore Economics was chosen as the focus subject. This programme offered 20 courses in English, including Advanced Readings in Economics, Regional Economics, and Energy Economics. Forty-one courses were offered in Turkish such as An Introduction to Economics, Macroeconomics, Microeconomics and Econometrics.

Participants

The Economics department had a total of 212 senior students. A total of 159 of these students who had taken courses both in English and Turkish volunteered to participate in this study.

Of these 159, 12 of them volunteered for a follow-up interview.

- Ninety-two participants were male, and 67 were female.
- Participant age range was between 21 and 27 (M=22.8)

- All participants had completed three and a half years of study of this Economics EMI programme.
- All participants were Turkish and spoke English as a foreign language. They all had very similar formal English language learning experiences within the Turkish education system.
- All participants had taken the same assessments, at the same time; mitigating any testing effect on the scores used in this analysis.
- All participants had completed a minimum of 18 EMI courses and 35 TMI courses. Each course covered different content.
- All participants had been taught by the same lecturers for all of their courses. This ensured a consistent learning experience, eliminating a possible teacher effect (see Mårtensson & Bild, 2016).

The limitation of using a convenience sampling method in this study needs to be recognised. This non-probability sampling strategy limits the widespread generalisability of these results to other EMI contexts across the globe (Dörnyei, 2007).

Data Collection

A mixed-methods survey approach (Creswell & Clark, 2017) was taken in this study. All exam scores of the students were obtained from the University's Registrar Office after all the legal and ethical permissions were granted. Exam scores were sorted according to the MOI of each course (i.e., Turkish or English). Data was collected using the following research instruments and measures:

- An average score on Economics content courses was used as measures for

EMI and TMI academic success.

- General English proficiency was measured using scores from a standard English proficiency test that most Turkish university students are required to take.
- Semi-structured interviews were conducted with a subgroup of students (n = 12. See Appendix A for the interview protocol). Throughout this discussion, pseudonyms are used.
- ‘EMI Academic Success’ was measured by dividing the sum of final course scores for all courses taken in English by the number of the English courses each student took. In order to have a comprehensive overview of students’ EMI academic success, a minimum of 18 courses was used as a unit threshold to be included in this study.
- ‘TMI Academic Success’ was measured by dividing the sum of final course scores for all courses taken in Turkish by the number of the courses each student took in Turkish.
- ‘General English Proficiency’ was measured as a score on an adapted version of the Cambridge Preliminary English Test (PET) which included sections on all four language skills; Reading, Listening, Writing and Speaking with a B1 difficulty level (Cambridge ESOL, 2014).

All participants provided written informed consent to partake in this study. A pilot study was conducted with a cohort of similar characteristics (n = 10). Piloting of the semi-structured interview protocol revealed no necessary changes to the wording of questions. Interview data was collected in the participants’ first language (i.e., Turkish).

Data Analysis

Using the computing software R, descriptive statistics were generated for all quantitative variables. Simple linear regression was used to investigate the relationship between EMI academic success and general English proficiency (RQ1) and TMI academic success (RQ2). To discover students' perceptions of the influence of general English proficiency and TMI on EMI academic success (RQ3), interview data was analysed in NVivo taking a content analysis approach (see Creswell & Clark, 2017). The interviews were transcribed and translated into English. Once the iterative coding process ceased to produce new themes (Gibbs, 2007), coding was checked for reliability. Cohen's kappa showed an 'excellent' rate of agreement between coders ($k = .918$), indicating high inter-rater reliability (McKinley & Rose, 2020).

Results

General English Proficiency and EMI Academic Success

To answer the first research question, simple linear regression was used to explore how much variance in EMI GPA scores was explained by general English proficiency (hypothesising that; the higher the English proficiency, the more successful students are in their EMI studies). Descriptive statistics in Table 1 show that the highest English Proficiency score was 93, the lowest 54, a range of 39, a mean of 72.23, and an SD of 6.31. Skewness was 0.94, within the acceptable $+1/-1$ range (Hair, Black, Babin, Anderson, & Tatham, 2010). Kurtosis was 1.18, falling within two times the standard error of kurtosis (i.e., $+1.788/-1.788$) as calculated by (Tabachnick & Fidell, 2013); data was therefore accepted as approximately

normally distributed. No outliers were detected, and the data met all the remaining assumptions for linear regression.

Table 1. Descriptive statistics of all variables

Variable	<i>N</i>	Mean	SD	Median	Min	Max	Range	Skew	Kurtosis
EMI Success score	159	48.09	13.77	46	20	91	71	0.33	0.22
General English proficiency	159	72.23	6.31	71	54	93	39	0.94	1.18
TMI Success score	159	62.01	11.81	64	27	92	65	-0.63	0.74

Table 2 illustrates that general English proficiency was not a statistically significant predictor of academic success in EMI ($F(1,157)=0.41, p=0.5198$). EMI course scores increased by 0.11 for every point increase in general English proficiency scores. R^2 showed that only 0.3% of the variance in EMI course scores was explained by general English proficiency. The standardised Beta was 0.051, demonstrating that EMI content scores increased by 0.051 standard deviations for every one standard deviation increase in general English proficiency. To summarise, participants' general English proficiency did not statistically significantly predict academic success in EMI.

Table 2. Linear regression output: General English proficiency and EMI success

	ΔR^2	<i>B</i>	Standardised β	<i>R</i>	<i>t value</i>	<i>p value</i>
Constant	-0.003	34.98			3.172	<0.001

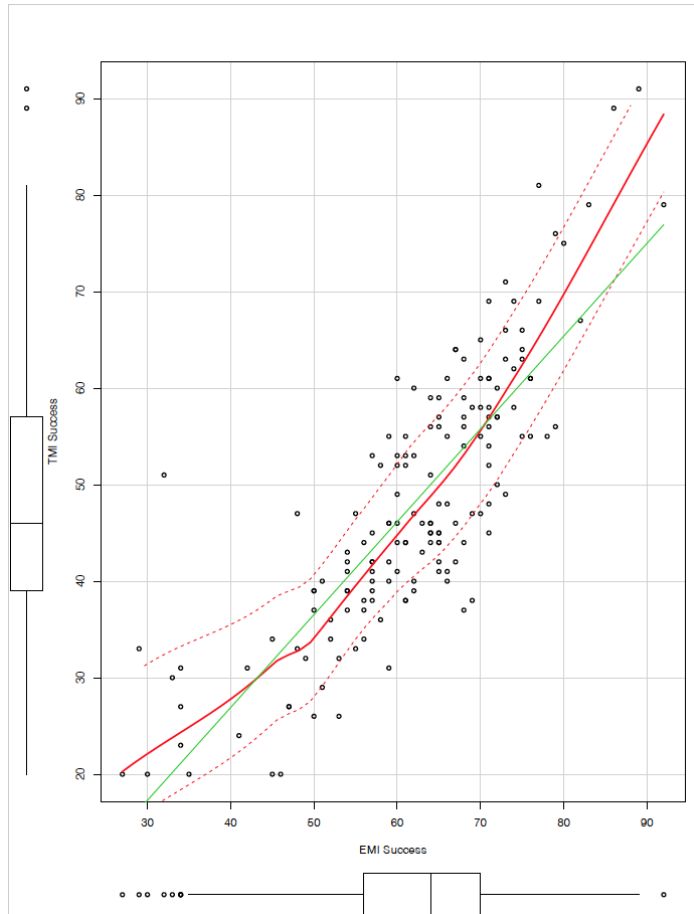
General		0.11	0.051	0.17	0.645	0.5198
English						
Proficiency						

Turkish Medium of Instruction and EMI Academic Success

In order to answer research question two, simple linear regression was again carried out to explore the relationship between TMI Success and EMI Success (hypothesising that; the more successful students are in courses taught in their native language, the more successful they are in their EMI courses). Descriptive statistics (refer back to Table 1) showed slightly more variance in EMI Success scores (mean=48.09, SD=13.77, range=71) than in TMI Success scores (mean=62.01, SD=11.81, range=65). However, no outliers were detected, and all assumptions for linear regression were met.

The scatterplot in Figure 1 indicates a positive correlation between EMI Success and TMI Success. This correlation was statistically significant ($r = 0.825$, $p = < 0.000000$), meaning the higher students' TMI success scores, the higher their EMI success scores.

Figure 1. Scatterplot of EMI Success and TMI Success



Simple linear regression showed a statistically significant relationship between participants' TMI course scores and their EMI course scores ($F(1,157)=335.2$, $p < 0.000000$). Table 3 shows that students' EMI course scores increased by 0.961 for every one-point increase in TMI course scores. The R^2 showed that TMI course scores explained an immense 67.9% of the variance in EMI course scores. The standardised Beta ($\beta=0.825$) confirmed these findings; EMI content scores increased by 0.825 standard deviations for every one standard deviation increase in TMI course scores ($SD=11.81$). Success in TMI courses therefore statistically significantly predicted success in EMI courses.

Table 3. Linear regression output: TMI Success and EMI Success

	ΔR^2	B	Standardised β	r	t value	p value
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Constant	0.679	-11.563			-3.487	0.000635 ***
TMI		0.961	0.825	0.05	18.307	<0.00000***
Success						

Perceptions of the impact of general English proficiency and TMI on EMI academic success

The third research question was addressed by examining the interview data. The analysis explicitly focused on what students thought about the potential impact of English language proficiency and success in TMI courses on their EMI academic success. Two main categories of responses emerged: (1) perceived problems with general English proficiency and (2) the influence of success in TMI on success in EMI courses. Sub-themes that arose in relation to GEP were: (1) lack of continuous academic language support, (2) lack of academic lexical competence, and (3) lack of academic discourse competence (see Table 4). Participants were mostly negative about the impact of general English proficiency on their success in EMI as they said that they did not have the necessary support to develop their *academic* English language. Ali (*EMI score=84%, TMI score=89%, Proficiency score=88%*) highlighted the lack of continuous academic language support by stating that the last time they took intensive English language courses was four years ago. He emphasised a need for “academic English courses”. Lack of exposure to academic vocabulary was another issue for participants. Bahar (*EMI score=89%, TMI score=85%, Proficiency score=91%*) felt more confident and comprehended more of the content when she knew the words in her EMI textbooks. She elaborated that “[students] need to study the new academic words and learn them first” to become more successful in their EMI courses. Participants also mentioned the importance of being exposed to academic discourse in their respective fields. Hasan (*EMI score=86%, TMI*

score=83%, Proficiency score=89%) said that knowing general English did not “always help [students] in the courses”, that they instead needed to know “English of Economics and how people talk and write about Economy”.

Table 4. Interview data categories and sub-themes with student quotes

Categories	Sub-themes	Students' Comments
Perceived problems with GEP	Lack of continuous academic language support	<p>“We took the Intensive English courses four years ago but we did not have any Academic English courses in our Department after that. I believe we need it.” (Ali, EMI score=84%, TMI score=89%, Proficiency score=88%)</p> <p>“I supplement my proficiency by taking private lessons. I think I pass the classes as I compensate my academic language training with what I learn in the private course.” (Birol, EMI score=87%, TMI score=86%, Proficiency score=79%)</p>
	Lack of academic lexical competence	<p>“To understand the course content better, we need to learn the lexical items in our field. This way we can understand the course and be more successful.” (Meltem, EMI score=88%, TMI score=87%, Proficiency score=82%)</p> <p>“When I know the words in the book, I can understand the new topic better in that course. I guess, we need to study the new academic words and learn them first.” (Bahar, EMI score=89%, TMI score=85%, Proficiency score=91%)</p> <p>“Some classes required vocabulary competence. The more words we learned, the more successful we were. That's why some students are more successful.” (Hasan, EMI score=86%, TMI score=83%, Proficiency score=89%)</p>
	Lack of	<p>“I feel proficient in English. However, knowing English does not always help us in the courses, knowing English of Economics and how people talk and</p>

	<p>academic discourse competence</p>	<p>write about Economy is what we need.” (Hasan, EMI score=86%, TMI score=83%, Proficiency score=89%)</p> <p>“Since many of the departmental EMI classes include field-specific terms and language use, students should be familiarised with them.” (Bahar, EMI score=89%, TMI score=85%, Proficiency score=91%)</p> <p>“... In general, someone who is over the B1 or B2 proficiency level with some academic English skills can succeed in the English courses very comfortably.” (Sevgi, EMI score=88%, TMI score=89%, Proficiency score=87%)</p>
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Sub-themes that arose in interview data in relation to the influence of TMI success on EMI success were: (1) the facilitative and mediatory role of the L1, (2) boosting confidence and motivation, and (3) transfer of knowledge between languages (see Table 5). Overall, participants thought that their success in TMI courses had some form of a positive impact on their success in EMI courses. Birol (*EMI score=87%, TMI score=86%, Proficiency score=79%*) highlighted the facilitative and mediatory role of the L1 on EMI success by saying that TMI courses helped him “to have background” in Economics. For him, TMI courses facilitated understanding of academic concepts in EMI courses. Success in TMI courses also boosted the confidence and increased the motivation of participants. This, in turn, helped them to be more successful in EMI. Finally, students also reported an influence of TMI success on EMI success was the transfer of knowledge between languages. Ayla (*EMI score=84%, TMI score=83%, Proficiency score=88%*) said: after taking “more and more courses in English, I realised that most of the topics were very similar and I

remembered them most from my older Turkish courses”. She elaborated that “studying some of the basics of Economics in Turkish and using this information in English courses” helped her become more successful in her learning.

Table 5. Interview data categories and sub-themes with student quotes

Categories	Sub-themes	Students' Comments
Influence of success in TMI on success in EMI courses	Facilitative and mediatory role of L1	<p>“Economics courses in Turkish helped me to have background in this field. They were very helpful about understanding the concepts in English courses” (Biol, EMI score=87%, TMI score=86%, Proficiency score=79%)</p> <p>“While studying, we can understand things with the help of translation thanks to what we learn in Turkish courses.” (Ali, EMI score=84%, TMI score=89%, Proficiency score=88%)</p> <p>“It's more understandable for us to be in line with Turkish.” (Ali, EMI score=84%, TMI score=89%, Proficiency score=88%)</p> <p>Teacher's use of L1 can sometimes help remember what we learned in courses in Turkish and connect them with the basic concepts in the EMI classroom” (Ayla, EMI score=84%, TMI score=83%, Proficiency score=88%)</p> <p>“Sometimes the lecturer gives reference to Turkish explanations in the EMI classroom, which helps me to build a good connection and improves my understanding” (Sevgi, EMI score=88%, TMI score=89%, Proficiency score=87%)</p>
	Boosting confidence and motivation	<p>“Because I first learned the content in some of my Economics courses in Turkish, I was more confident and motivated while studying other similar courses in English” (Sevgi, EMI score=88%, TMI score=89%, Proficiency</p>

		<p>score=87%)</p> <p>“Being successful in Turkish Economics courses made me think that I can also do well in English courses and increased my confidence.”</p> <p>(Ali, EMI score=84%, TMI score=89%, Proficiency score=88%)</p>
	<p>Transfer of knowledge between languages</p>	<p>“As I took more and more courses in English, I realised that most of the topics were very similar and I remembered them most from my older Turkish courses. I think studying some of the basics of Economics in Turkish and using this information in English courses helped me become more successful.”</p> <p>(Ayla, EMI score=84%, TMI score=83%, Proficiency score=88%)</p> <p>“Relating the texts in EMI courses to the texts of our classes in Turkish is the main factor in my success” (Bahar, EMI score=89%, TMI score=85%, Proficiency score=91%)</p>

Discussion

General English Proficiency and EMI Academic Success

This study set out to investigate the possible relationship between students’ general English proficiency and their academic success in EMI courses. A simple linear regression revealed that GEP was not a statistically significant predictor, accounting for only 0.3% of the variance in EMI course scores. This finding is in contrast to previous EMI success research that has found English competence to be a strong predictor of EMI academic outcomes (Li, 2018; Rose et al., 2019; Xie & Curle, 2020). Similarly, Terraschke and Wahid (2011) examined the impact of English for Academic Purposes (EAP) on academic performance of

international postgraduate students in Australia and found out that students' English competence played a significant role in their performance. These studies, however, operationalised English competence as academic English proficiency rather than GEP. The finding in this study reveals that when the English language support given to students before or during their EMI studies is not specifically related to EMI academic content, a student's general English proficiency level does not affect their success in EMI. Given the dearth of research investigating the impact of GEP in EMI success, this study makes a significant contribution to this field of research. More specifically, it provides a response to one of the six issues put forward in Macaro et al.'s (2018) systematic review to have an in-depth understanding of EMI outcomes. Macaro et al. stated that we need to know about "the consequences of students being admitted to courses/lecture rooms with different levels of English proficiency, or different types of linguistic knowledge" (p. 38). Findings of our study propose that, at least in the Multilingual Turkish HE setting, general English proficiency is not helping EMI students to attain the success they are looking for. Future research might therefore further explore general English proficiency (such as TOEFL or IELTS scores) as predictors of students' content grades.

Turkish Medium of Instruction and EMI Academic Success

Another aim of this study was to examine the influence of TMI academic success on EMI academic success. The findings revealed that TMI academic success was a statistically significant predictor of EMI academic success in the Turkish higher education setting. Results of the interviews supported this finding by demonstrating the mediatory role of the L1 on EMI success. So far, no studies have examined the influence of L1 MOI courses on EMI academic success (Macaro et al., 2018; Malmström et al., 2016), particularly

programmes that adopt a Multilingual Model (Macaro, 2018). This finding *may* be explained using the Transfer of Knowledge theory (Brooks, & Danserau, 1987), where the transfer of background knowledge in L1 “enables students to perform academically in L2” (Olivares, 2002, p. 14). Studies by Dong (2002) and Lemberger and Vinogradova (2002), in bilingual education settings in the USA, demonstrated how transferring content knowledge from their L1s helped bilingual students become more successful in L2 courses. Similarly, L1 course content was a boosting factor for success in EMI courses for our participants.

Cummins’ (2017) model of Multilingual Transfer, which is also known as the ‘interdependence hypothesis’ (Cummins, 1981), may also explain this finding in relation to two principles: ‘transfer of conceptual elements’ and ‘transfer of metacognitive and metalinguistic learning strategies’. In the interviews, some of our participants stated that the courses they took in their L1s helped them to understand the concepts in their English courses. Students stated that they also used some strategies (e.g., translation or juxtaposition) to compare and relate what they learned in different mediums of instruction. However, the fact that this study cannot disambiguate the possible causes of this observed relationship between EMI and TMI is recognised as a limitation. A caveat to keep in mind should be the fact that finding a positive correlation should not be confused with causality because “they can be due to all kinds of other effects, ranging from socio-economic correlates to task-wisness to general cognitive abilities that are not related to language exclusively” (Berthele, 2019, p. 3). For example, a potential contributing factor might be the cognitive and personality characteristics of individuals. In other words, a successful student might be equally successful in both MOIs. However, instead of having a competing model, Cummins (2017) proposes that existing underlying attributes and transfer do accompany each other and should be seen as complementary rather than competitive.

Nevertheless, from this main finding, we therefore advocate a Multilingual Model of EMI implementation. This involves students taking some basic, introductory content courses through their L1 to help them gain certain basic knowledge that can then be transferred to their EMI courses; such as critical concepts or key vocabulary. Additionally, we call for further research into Multilingual Model EMI settings to collect further empirical evidence of this transfer, as despite concept comprehension having been gained through different mediums of instruction, the concepts are interdependent on one another. Drawing on a metaphor, this is very similar to the roots of the Kahikatea trees in New Zealand; inter-twinned and supportive of each other. This study revealed how the content studied through TMI feeds and enhances the content studied through EMI. Nevertheless, more studies are still needed to investigate whether this influence is bidirectional or not.

Perceptions of the impact of GEP and TMI on EMI Academic Success

Qualitative data findings highlighted issues regarding the conceptualisation of language proficiency within the institution, as well as a plea by students for academic language support, particularly in relation to lexical items. The significance of academic vocabulary is discussed in the EMI literature (Evans & Green, 2007; Malmström et al., 2016). For example, Evans and Green (2007) found that university students in Hong Kong identified inadequate vocabulary as a major barrier to understanding EMI lectures because they thought that their *technical* vocabulary was limited. Macaro et al. (2020) list vocabulary as a leading challenge faced by EMI students. Therefore, even though the quantitative data results in this study did not support the hypothesis that language proficiency has a significant impact on EMI success; an indication that academic language is a challenge for students was evident in the interview

data. A lack of academic language support in the institution can be explained by the very nature of EMI at higher education level in many settings around the globe, including Turkey. EMI “embodies an institutional decision aimed at achieving mainly top-down specific objectives related to internalisation, among which language aims are not usually envisaged” (Lasagabaster, Doiz, & Pavón, 2019, p. 112)

Conclusion and Implications

The two main findings of this study offer implications for the influence of language proficiency and L1 MOI on EMI academic success. Our first main finding, the absence of language proficiency as a predictor of success in EMI, on the surface, appears to contradict previous research findings (Li, 2018; Rose et al., 2019; Xie & Curle, 2020). However, when the nature of language proficiency in this study is taken into consideration, the argument for more academic language support in EMI programmes is reinforced. Many, if not all, universities in Turkey, similar to some other EMI settings around the globe, provide general English courses in their Intensive English programmes to prepare students to study through EMI. Our findings demonstrate that general English language proficiency may not be as beneficial as academic proficiency to overall success in EMI. Students should therefore rather be exposed to more Academic English courses in such preparatory programmes. Specifically, support to enhance learning of academic vocabulary should be provided (e.g. through the use of glossaries or word grouping strategies). Future research to track the development of this proficiency should then be carried out in longitudinal studies to provide further evidence for this recommendation, as well as gain a clearer picture of the role of language proficiency in EMI success. Our second main finding, TMI academic success predicting EMI academic success, provides evidence of the positive effect of offering some basic, introductory content

courses through the L1 alongside EMI courses. There is a need, however, for replication studies to warrant generalisation of this finding. Nevertheless, this provides implications for policy and the approach taken to EMI implementation, advocating the Multilingual EMI Model to enhance EMI academic success.

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Appendix A - Semi-structured Interview Protocol

1. What do you think are the main factors that make you successful in your EMI courses?
2. Do you think your overall English proficiency affects your success in EMI courses?
3. Do you think your TMI courses influence your success in your EMI courses?
4. Do you think it is necessary to know English at a certain proficiency level in order to succeed in your EMI courses?
5. What should a student in your department consider doing to be successful in EMI courses?