Relocating from EFL to EMI: a case study on L2 learning motivation of English major students in a transnational university in China

Mingyu Li[1*]

*Correspondence:
js52591314@gmail.com

[1] University of Exeter, Exeter, UK

Abstract

Drawing from (Dörnyei's, The Psychology of the language learner: Individual differences in second language acquisition, 2005) L2 Motivational Self System, this case study delved into the L2 learning motivations of liberal arts and science English majors at a transnational university in China, where English Medium Instruction (EMI) is prevalent. The study aimed to uncover how the EMI educational setting, alongside disciplinary backgrounds, shapes students' motivational landscapes. Utilising a mixed-methods approach, a 4-point Likert scale questionnaire was first administered to 182 students, followed by semi-structured interviews with six purposively selected participants to ensure a representation of diverse perspectives. Quantitative data were analysed using descriptive statistics and an independent samples t-test to pinpoint motivational differences between the two groups, with Cohen's d effect size test further elucidating the significance of these differences. Thematic analysis of qualitative data provided a deeper layer of insight, which, when cross-examined with quantitative results, revealed a nuanced understanding of motivational dynamics. Key findings highlighted that both student groups were driven by factors such as ideal L2 self, ought-to L2 self, international posture, and instrumentality. However, within the EMI context, liberal arts students exhibited heightened sensitivity to their ought-to L2 selves, language anxiety, and teacher influence compared to their science counterparts ($p < 0.05$, $d_{Cohen} > 0.8$). These distinctions underscore the EMI context's role in modulating motivational profiles, particularly accentuating certain motivational factors among liberal arts students. In light of these EMI-mediated motivational nuances, the study proposes several educational implications, including enhancing teachers' professional development training, integrating English learning in EMI programmes with students' aspirations, and fostering intercultural interactions to enrich students' language and cultural experiences.

Keywords: L2 learning motivation, L2 motivational self system, Undergraduate English majors, English medium instruction, English as a foreign language

Introduction

As a salient determinant of successful second language acquisition (SLA), second language learning motivation (L2LM) has attracted substantial academic attention since the 1960s (Gardner, 2001). Dörnyei (2005) identified three distinct phases in the evolution of

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L2LM research, namely the "social psychological period", "cognitive-situated period" and "process-oriented period". More recently, L2LM has been perceived as a dynamic and fluid process wherein motivation development intertwines with learners' ever-changing contexts (Dörnyei, 2017), introducing a new social-dynamic dimension to the study of L2LM. From this vantage point, research has illustrated that alterations in L2 learners' learning contexts can lead to shifts in their learning motivation (Li, 2017). While burgeoning research attention has focused on the L2LM of learners transitioning from their EFL (English as a Foreign Language) learning contexts to an ESL (English as a Second Language) environment, there remains a conspicuous gap in our knowledge regarding the L2LM of students who relocate within EFL contexts into EMI environments (Du & Jackson, 2018), such as transnational university settings. In these EMI contexts, learners not only face linguistic challenges but also encounter unique academic cultures and disciplinary practices (Kamaşak et al., 2021), potentially reshaping motivational constructs. Recognising this gap, the primary objectives of this study are to meticulously examine the L2LM of students immersed in EMI settings and further explore how these unique educational landscapes might mediate their motivational landscapes. Through this investigation, the study aspires to contribute to the broader discourse on L2LM by elucidating how EMI environments might influence students' motivational orientations towards English language learning.

Moreover, studies on L2LM have largely centred on exploring the correlation between learners' motivation and various aspects of their profiles, such as gender (You et al., 2016), age (Ghenghesh, 2010), and learning anxiety (Liu & Huang, 2011). However, scant research has scrutinised the socio-educational background of these L2 learners by assessing disciplinary differences in their EFL contexts. In Chinese educational contexts, before enrolment in an undergraduate programme, most learners were either liberal arts (Wen-Ke) or science (Li-Ke) students in their secondary schools, studying various subject pathways offered by these institutions. Given that the English subject area tends to resonate more closely with liberal arts than science disciplines (Yuan & Gao, 2015), it could be conjectured that undergraduates from a liberal arts socio-educational background may exhibit distinct L2LM compared to their science-oriented peers. While this hypothesis remains relatively unexplored, its validation could potentially provide English language teachers with insightful pedagogical strategies for enhancing the L2LM of students from diverse socio-educational backgrounds.

In addressing the identified research gaps, this study draws upon the L2 Motivational Self System (L2MSS) framework (Dörnyei, 2005) as a foundational theoretical perspective to investigate the L2LM of undergraduate English majors at a transnational university in China, a context where EMI is predominantly implemented. The selection of L2MSS is deliberate, given its comprehensive approach to understanding the multifaceted nature of L2LM, including aspects such as the ideal L2 self and the ought-to L2 self, which are particularly relevant in the dynamic and diverse EMI context of this study. This study distinctly contributes to the existing body of knowledge by exploring the L2LM within a unique socio-educational setting that has been underrepresented in previous research. By employing a mixed-method research design to examine the L2LM of these students, the study offers a comprehensive analysis of how socio-educational backgrounds intertwine with L2LM. It delves into the contrasts in L2LM between

learners from liberal arts and science backgrounds, a comparative aspect not extensively explored in existing literature. Additionally, it identifies and analyses potential factors influencing their motivation, thereby providing nuanced insights into the motivational dynamics in EMI contexts. This research, therefore, not only bridges critical gaps in our understanding of L2LM in transnational educational settings but also lays the groundwork for future inquiries into motivational variances across different disciplinary backgrounds in EMI programmes.

Literature review

L2MSS

In the early stage of L2LM conceptualisation, the integrative and instrumental perspectives of Gardner and Lambert (1972) significantly influenced the understanding of motivation. Integrative motivation, in this context, is the learners' appreciation of a language-learning community and their desire to integrate into it (Gardner, 1985). This understanding, while insightful for multilingual contexts, lacks clarity in EFL communities due to the absence of a clear definition of a target language community. Dörnyei (2005) addressed this by identifying the core of integrativeness as being rooted in emotional and psychological identification. Drawing from the notions of possible selves (Markus & Nurius, 1986) and the self-discrepancy theory (Higgins, 1987) from personality psychology, Dörnyei (2005) expanded on this concept by introducing the concept of *ideal L2 self*, a part of the L2MSS, arguing that in an EFL community where an L2 is mainly addressed in educational contexts, the concept of integrativeness can be reflected in the intellectual and cultural asset of the target language.

The L2MSS consists of three components: *ideal L2 self*, *ought-to L2 self*, and *L2 learning experience*. The first two components are inspired by Higgin's (1987) concept of *future self-guides*. Ideal L2 self refers to "the L2-specific facet of one's ideal self" (Dörnyei, 2009, p. 29), while ought-to L2 self includes "attributes that one believes one ought to possess in order to avoid possible negative outcomes" (Dörnyei, 2009, p. 29). L2 learning experience refers to the environmental factors influencing learners' L2LM. For instance, in contexts where learners have limited access to their ideal L2 communities, the role of teachers becomes pivotal as they can significantly shape learners' motivation through their teaching styles, feedback, and emotional support (Hennebry-Leung & Xiao, 2023). Similarly, peer interaction plays a critical role in the L2 learning experience by bolstering or hindering motivation (Sato, 2017). While ideal L2 self and ought-to L2 self are primarily "teleological" in nature, focusing on future goals, L2 learning experience is "casual", emphasising present conditions and experiences (Dörnyei, 2005, pp. 105–106). Considering the study's context, where learners have limited access to their ideal L2 communities, the L2MSS serves as an apt theoretical framework.

Although the use of L2MSS as a dynamic model has been validated by substantial research studies (e.g., Naderi et al., 2021; Yousefi & Mahmoodi, 2022), it has been pointed out that the extent to which ideal L2 selves motivate learners is conditional and subject to, for instance, their current self and context. For instance, Dörnyei (2009) points out that discrepancies between current and ideal selves can fuel motivation, highlighting the importance of understanding learners' current selves. Furthermore, the motivational capacity of ought-to self has yielded inconsistent results in studies (e.g.,

Dörnyei & Chan, 2013; Islam et al., 2013), with some suggesting context-specific effectiveness (Ushioda, 2009). Lastly, despite being less researched, the L2 learning experience component has been found to be associated with the ways that L2 learners are affected by their motivation (Saito et al., 2018).

In addition, while the framework of L2MSS provides a comprehensive framework for understanding the complex interplay of factors influencing L2LM and has universal applicability, its components manifest uniquely in different cultural and educational contexts (Dörnyei, 2019). In transitioning from the broader theoretical aspects of L2MSS to the specific regional context of EMI education in China, the context of the present research study, it is crucial to consider how cultural, social, and educational factors in such setting interact with and shape the components of L2MSS (Chen et al., 2020).

China's educational landscape, particularly in relation to English language learning, presents a distinctive milieu. The increasing emphasis on English proficiency in the country's educational policies and the growing trend of EMI in Chinese higher education institutions (HEIs) provide a unique backdrop for examining L2LM (Thai & Zhao, 2022). In this context, learners' ideal L2 selves are not only shaped by global English proficiency standards but also by the specific aspirations and opportunities that the Chinese educational system offers (Wong, 2020). Similarly, their ought-to L2 selves may be influenced by societal expectations and family pressures, which are characteristic of the Chinese socio-cultural environment (Xuan et al., 2023). Furthermore, the L2 learning experience in Chinese educational institutions, particularly in EMI settings, is influenced by specific pedagogical approaches, teacher-student dynamics, and peer interactions unique to this region (An & Macaro, 2022). These factors can significantly impact how students perceive their success and develop their motivation in learning English.

Therefore, understanding L2LM in China through the lens of L2MSS necessitates careful consideration of these regional characteristics. This study aims to bridge the gap between the general theoretical framework of L2MSS and the particularities of EMI educational contexts, offering insights into how the L2MSS components are manifested and interact in such settings (Lee & Lu, 2021). By focusing on the specific educational and cultural environments, this research contributes to a nuanced understanding of L2LM, highlighting how theoretical constructs are adapted and reshaped in distinct regional contexts.

L2LM Research in the Chinese context

The L2LM research in China began in the 1980s, initially using theories and models introduced from Western academia. Early researchers (e.g., Gui, 1985; Wen, 1996) focused primarily on the impact and function of foreign language learning motivation on English learning among Chinese students. Research methodologies evolved in the 1990s with a shift towards critical thinking, theoretical reasoning, and multi-perspective reviewing. Gardner's (1985) model of integrative and instrumental motivations was commonly used, with most studies conducted at the university level. For instance, Gao et al. (2004) proposed seven types of motivation, providing a stable basis for future research. Subsequent studies (e.g., Gao et al., 2007; Xu & Yang, 2015) explored the relationship between English learning motivation and other factors.

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However, research examining university students' L2LM in relation to their socio-educational disciplinary differences is limited. This might be due to the fact that disciplinary classification at universities is different from and more complex than that at high schools. Yin's (2017) and Lin's (2017) studies are two of a few studies that examined the difference of L2LM among university students from various disciplinary backgrounds. Yin's (2017) study on Chinese undergraduates suggested that compared to science students, liberal arts students are more motivated by their ought-to L2 selves and learning experience both in and outside the university. Likewise, Lin (2017) conducted a questionnaire survey among 120 students in a university and found that although both groups are highly motivated by instrumental factors, science students feel more influences on their English learning brought by the need for self-development.

Another research gap pertains to university students transitioning interculturally from an EFL learning environment to an EMI context. Existing studies (e.g., Gao, 2008; Li, 2023) have shown an increase in students' English learning motivation following a context shift but have noted that this motivation is personally and experientially bound to their shifting self-conception and specific learning experience in the environment. This underscores the need for further intercultural exploration of this aspect of L2LM.

The study

Addressing the identified gaps in the literature, this study was designed with the objective of exploring the L2LM of undergraduate English majors who have relocated from an EFL context to an EMI context. In specific, informed by the gaps identified above, the study sought to 1) examine the L2LM of English majors from liberal arts and science disciplines, highlighting both the commonalities and variances, and 2) explore the contextual and educational factors within the EMI setting that might contribute to these motivational similarities and differences. To address these objectives, a mixed-method case study approach was adopted, utilising both a questionnaire to capture a broad perspective of L2LM across disciplines and semi-structured interviews to delve into the specific influences of the EMI context on these motivational aspects. This design was chosen for its capability to yield a "holistic description and explanation" (Merriam, 2001, p. 29) of the phenomenon under investigation. The use of multiple data sources also served to enable triangulation and mutual compensation, thereby enhancing data validity (Lund, 2012).

Participants and context

The study was conducted at University A, a transnational university located in mainland China, jointly operated by a domestic Chinese institution and a university from an English-speaking country. It employs an English curriculum and EMI, implying that the majority of the modules are delivered in English and students are typically required to complete their assignments in the same language.

Guided by the recommended sample size range suggested by Bartlett et al. (2001, as cited in Gray, 2014, p. 245), this study engaged 182 English-major participants, comprising 134 females and 48 males, who were randomly selected. The gender distribution and disciplinary backgrounds of participants are crucial for understanding the context of this study, as they reflect the diverse perspectives and experiences that contribute to

the investigation of L2LM. Among the participants, 139 came from a liberal arts background, while 43 hailed from a science discipline, offering a comprehensive view of the academic diversity within the English-major cohorts at the university. Details regarding their disciplinary backgrounds and demographic information are presented in Table 1 below. Notably, participant distribution from liberal arts and science disciplines approximately follows a 3:1 ratio, mirroring the general ratio of these student populations within the university. This approach ensures that the student's findings are not only representative of the university's context but also more generalisable to similar educational settings.

Instruments

The study utilised a self-report Likert-scale questionnaire complemented by a semi-structured interview. The questionnaire was chosen for its ability to gather copious information within a restricted timeframe, with data from a Likert-scale questionnaire being comparatively easy to process using software (Dörnyei, 2005). As Dörnyei and Taguchi (2010) have posited, a questionnaire allows research to encompass "a variety of people in a variety of situations targeting a variety of topics" (p. 10). Given the multiple elements measured in this study, the versatility of the questionnaire provides considerable advantages from this perspective.

The questionnaire for this study was principally inspired by Ryan's (2009) original design, which is grounded in the L2MSS theory and has been validated across international contexts. To tailor this instrument to the specific context of this study, a careful adaption process was undertaken. First, to align with the Likert scale format conducive to the analysis, modifications were made to the phrasing of original statements. For example, the general inquiry "Do you think English is important in the world these days?" was transformed into a more assertive statement suitable for a Likert-scale response: "English is one of the most important languages in the world." This change not only facilitated ease of response but also aligned with the quantitative analysis framework of this study. Additionally, items that did not directly relate to the core focus of this research, such as those addressing aspects beyond the scope of L2LM, were judiciously excluded. An example of an excluded item is "I do not trust people with different customs or values to myself," which pertains more to ethnocentrism than to L2LM.

Table 1 Participants' disciplinary track and gender

	Liberal Arts		Science	
	N	**%**	**N**	**%**
Gender				
Male	14	10	38	88
Female	125	90	5	12
Year of Study				
Year 1	27	19	10	23
Year 2	43	31	13	30
Year 3	46	33	14	33
Year 4	23	17	6	14
Total	139		43	

This illustrates the participants' disciplinary track when they were studying in their secondary schools

Moreover, in consideration of participant engagement and to mitigate potential fatigue, the questionnaire was condensed to a more manageable size of 30 items. This reduction was strategically executed to preserve the instrument's integrity and focus, ensuring that the essential motivational constructs were comprehensively covered without overwhelming participants (Gray, 2014). This streamlined version of the questionnaire was designed to capture the nuanced motivational dynamics relevant to our study's context, informed by an extensive review of related empirical studies, such as those by Warden and Lin (2000) and Yashima et al. (2004).

The questionnaire consists of two sections. The first was designed to procure demographic information from participants such as their age, gender, year of study, disciplinary track, and future plans. The second section, the core of the questionnaire, took the form of a self-report Likert scale, with four points ranging from *1—strongly agree* to *4— strongly disagree*. The decision to use a 4-point Likert Scale was grounded in a strategic effort to mitigate the central tendency bias often associated with neutral options in 5-point scales where the respondents may default to the middle option as an easy out, in instances including uncertainty or rejection to the statement (Dolnicar, 2021). Hence, the absence of a neutral option on a 4-point scale encourages respondents to make more definitive choices, thereby providing more distinct data for analysis. The questionnaire covered three main categories—1) L2MSS, 2) other established motivation-related factors, and 3) social influences. These main categories were further subdivided into ten sub-categories, each containing three statements. To preclude circumstances where participants might not respond seriously, one statement from each category was reverse phrased. Table 2 provides an overview of the questionnaire (sub)categories, and the comprehensive questionnaire is provided in the Appendix.

To confirm the internal consistency of the questionnaire scales, Cronbach's alpha coefficients were performed to test each of the scales investigated. Table 3 illustrates the reliability coefficients of the scales. All scales were kept for further analysis based on the results that the coefficients of the whole scale are over 0.60 (Ursachi et al., 2015).

Following the questionnaire survey, a semi-structured interview was carried out with six voluntary participants. The semi-structured format provided participants with the flexibility to express themselves, enabling the researcher to uncover additional insights not attainable through a structured interview (Dörnyei, 2007). It also served as a data

Table 2 Questionnaire scales

Category	Sub-Category
L2MSS	Ideal L2 self
	Ought-to L2 self
	In-school learning experience
	Out-of-school learning experience
Other well-established factors	International posture
	Instrumentality
	Language anxiety
Social influence	Teacher influence
	Family influence
	Peer influence

Table 3 Reliability coefficients in the sub-samples for the scales

Scales	Number of Items	Whole Scale	Liberal Arts	Science
Ideal L2 self	3	.62	.61	.64
Ought-to L2 self	3	.64	.62	.65
In-school learning experience	3	.70	.74	.68
Out-of-school learning experience	3	.64	.75	.66
International posture	3	.67	.64	.69
Instrumentality	3	.67	.65	.70
Language anxiety	3	.65	.64	.68
Teacher influence	3	.68	.60	.74
Family influence	3	.70	.72	.66
Peer influence	3	.72	.67	.74

triangulation tool, complementing the quantitative data from the questionnaire and thereby enhancing the overall data validity and reliability (Gray, 2014). Informed by prior research studies, the interview protocol comprised eleven guiding questions with various follow-up inquiries contingent on participant responses. The initial ten questions correlated with the sub-categories in the questionnaire, while the final question sought to explore participants' personal perspectives regarding their English learning motivation. This strategy aimed to derive a deeper understanding of their questionnaire responses.

Data collection

The data collection process spanned from May to June 2018, after the approval was given by the Ethics Board of the University. Informed consent was obtained by asking the participants to sign a consent form prior to data collection, and permission for audio recording was obtained prior to the interview. The questionnaire was designed to be bilingual, incorporating both English and Chinese languages. Prior to formal deployment, it was piloted among individuals from similar socio-educational and socio-cultural backgrounds. The finalised questionnaire was distributed to the 182 English major students by the researcher at the conclusion of their core module sessions, achieving a 100% return rate with all responses deemed valid for analysis. Accompanying the questionnaire, a consent form was provided, clearly stating that six participants would be randomly selected for a voluntary follow-up interview. This was reiterated after the completed questionnaires were collected to emphasise the voluntary nature of the participation.

The interview was designed to offer complementary insights to the questionnaire data, thereby facilitating a more in-depth understanding of the participants' L2LM. Given its supplementary and qualitative nature, a focused group size of six participants was deemed sufficient for this purpose (Gray, 2014). In mid-June, six participants were randomly selected for the semi-structured interview, including four liberal students (referred to as Participants A, B, C, and D in the following sections) and two science students (referred to as Participants E and F in the following sections). This ratio, similar to the random sampling for the questionnaire, reflects the general ratio of the student populations in the university. The

interviews were conducted face to face, predominantly in Chinese, our shared native language, with occasional switches to English due to natural speech habits.

Data analysis

The quantitative data was using IBM SPSS Statistic 24. To address the first research question, a descriptive statistic and an independent samples t-test were performed to calculate and cross-compare the mean values of the two groups across each motivational scale, followed by an effect-size calculation to measure the magnitude of observed motivational differences between the two groups. For the second research question, the mean values for each scale from the two groups were tabulated and converted into a histogram. This visualisation allows for direct observation of the highest mean values between the two groups.

Qualitative data analysis was conducted using QSR NVivo. Interview recordings were first transcribed automatically using Xun Fei Ting Jian, a professional online Chinese/English transcribing tool powered by iFlytek, and subsequently manually corrected by the researcher. The original bilingual transcripts served as the basis for the analysis, with quotations cited in this paper translated fully into English. While the questions followed a framework, the thematic analysis was performed in an inductive manner using an open-coding approach (Maguire & Delahunt, 2017), without a pre-determined coding framework. The coding process began with a careful, iterative reading of the transcripts, highlighting potentially pertinent segments and making marginal notes. After familiarisation, data was coded line by line using NVivo, minimising the possibility of overlooking significant themes and thereby ensuring a comprehensive capture of the data's richness and complexity. In addition, the in vivo coding technique (Saldaña, 2016) was frequently adopted, where the participants' own words were directly used as the codes for relevant narratives. This facilitated minimising possible misinterpretation due to researcher bias and hence enhanced the reliability of the data analysis. The initial coding was refined in subsequent rounds to develop comprehensive categories. With the revised codes provisionally categorised and guided by the research questions, the search began "for relationships between and within categories" (Ellis & Barkhuizen, 2005, p. 268). This process continued until data saturation was achieved, defined here as the point at which no new themes or insights were emerging from the data (Miles et al., 2020). This was determined by a consistent repetition of themes across multiple categories of the L2MSS framework. At this point, the analysis researched a stage where further coding and categorisation of data did not yield additional insights, signalling that saturation had been attained. This ensured that the analysis was exhaustive and that the themes captured were fully representative of the data. To further enhance the reliability of the data analysis, data triangulation was employed, integrating findings from the semi-structured interviews with the quantitative data from the questionnaires. This triangulation not only provided multiple lenses through which to view the data but also facilitated the validation of our qualitative insights against the quantitative results.

Results

To address the research questions, in this section, results from quantitative data analysis are first reported to explore similarities and differences between the two groups. Then, the consistency of the data is cross-checked by presenting qualitative data from the interviews.

English Majors' L2LM

The first research question concerns the similarities and differences between liberal arts English majors and science English majors in their L2LM. To answer this, descriptive statistics and an independent samples t-test were performed to examine the existence of similarities and differences. The results are shown in Table 4.

Upon examining the mean values displayed in Table 4, it becomes evident that both groups exhibit high mean values in ideal L2 self' (liberal arts: 3.86; science: 3.84) and international posture (liberal arts: 3.83; science: 3.86). These values potentially signify that both groups are motivated to learn English due to their aspiration to become fluent English speakers. Furthermore, it may imply their cognisance of English's global importance and its role within the international context. The groups also demonstrate relatively high mean values in ought-to L2 self (liberal arts: 3.55; science: 3.23), instrumentality (liberal arts: 3.19; science: 3.12), and family influence (liberal arts: 3.21; science: 3.20). These data suggest that students' English learning motivation also stems from extrinsic factors such as the awareness of parental expectations and the desire to avert negative repercussions, such as failing exams.

Low scores were also found to be common between the groups in certain categories. Both groups display low mean values for in-school learning experience (liberal arts: 1.55; science: 1.58) and out-of-school learning experience (liberal arts: 1.60; science: 1.66). This could suggest that neither liberal arts nor science students place much emphasis on the impact of learning experiences on their progress in English. Similarities are also evident in peer influence (liberal arts: 1.79; science: 1.79), which might suggest that peers' influence on English learning progress is not deemed significant by either group.

Table 4 Independent samples T-Test of scores of two disciplinary tracks

Factor	Scale	Group	Mean	SD	F	P
L2MSS	Ideal L2 Self	Liberal Arts	3.86	.18	.149	.584
		Science	3.84	.18		
	Ought-to L2 Self	Liberal Arts	3.55	.34	.226	.000*
		Science	3.23	.35		
	In-School LE	Liberal Arts	1.55	.32	1.425	.708
		Science	1.58	.38		
	Out-of-School LE	Liberal Arts	1.60	.29	1.207	.344
		Science	1.66	.28		
Other Well-Established Motivational-Related Factors	International Posture	Liberal Arts	3.83	.22	.271	.556
		Science	3.86	.20		
	Instrumentality	Liberal Arts	3.19	.33	2.362	.390
		Science	3.12	.41		
	Language Anxiety	Liberal Arts	3.58	.37	2.821	.000*
		Science	2.06	.34		
Social Influence	Teacher Influence	Liberal Arts	3.32	.29	5.810	.000*
		Science	2.12	.37		
	Family Influence	Liberal Arts	3.21	.28	1.433	.866
		Science	3.20	.33		
	Peer Influence	Liberal Arts	1.79	.30	.664	.737
		Science	1.76	.36		

$^*p < .05$, LE = Learning Experience

Table 5 Cohen's d_s and effect sizes of the three scales

Scales	Group	Mean	SD	N	Cohen's d_s
Ought-to L2 Self	Liberal Arts	3.55	0.34	139	0.93
	Science	3.23	0.35	43	
Language Anxiety	Liberal Arts	3.58	0.37	139	4.18
	Science	2.06	0.34	43	
Teacher Influence	Liberal Arts	3.32	0.29	139	3.86
	Science	2.12	0.37	43	

Table 6 Examples of participant responses to questions about in-school learning experience

Participant B	Many things in this course have already been taught in my high school, I don't know why I should come here and learn them again…It is kind of meaningless
Participant F	I don't enjoy my current English class because I don't think the teacher actually knows how to teach English because what they do is just read the textbook and slides

Regarding the differences between the two groups, three significant disparities were identified. The first pertains to ought-to L2 self (liberal arts: 3.55; science: 3.23, $p < 0.05$), indicating that while both groups are motivated to learn English to meet others' expectations or avoid adverse outcomes, liberal arts students exhibit a greater awareness of this phenomenon than their science counterparts. The second disparity is found in language anxiety (liberal arts: 3.58; science: 2.06, $p < 0.05$), suggesting that liberal arts students experience more anxiety in English usage than science students. The final difference appears in teacher influence (liberal arts: 3.32; science: 2.12, $p < 0.05$), indicating that compared to science students, liberal arts students place greater emphasis on the role of their English teachers in their English learning journey. To further explore the differences between these three scales and their effect sizes, Cohen's d_s were calculated with the formula (1) from Lakens (2013), expressed as follows, in which $\bar{x}_1$, $\bar{x}_2$, n_1, n_2, SD_1 and SD_2 refers to the mean values, sample sizes and standard deviations of the two groups respectively.

$$d = \frac{\bar{x}_1 - \bar{x}_2}{\sqrt{\frac{(n_1-1) \times SD_1^2 + (n_2-1) \times SD_2^2}{n_1+n_2-2}}} \tag{1}$$

The results are presented below in Tables 5, 6, 7, 8 and 9.

In this analysis, the effect sizes calculated as Cohen's d_s reveal significant motivational differences between liberal arts and science students, reinforcing the statistical significance of these three motivational scales yielded from the t-test. For the ought-to L2 self scale, an effect size of 0.93 indicates a large impact, suggesting that liberal arts students are more motivated by external expectations in their English learning journey. Even more strikingly, the language anxiety scale, with an effect size of 4.18, and the teacher influence scale, at 3.86, demonstrate exceptionally high differences. These suggest that liberal arts students experience substantially more language anxiety and place greater emphasis on the influence of their teachers compared to their science counterparts.

Table 7 Examples of participant responses to questions about language anxiety

Participant A	I feel most nervous when I need to do a presentation in front of my class because it is generally easy for me to get nervous when doing a public speech
Participant C	I find my anxiety level changing quite a lot…depending on who I am speaking to, for example. If I am talking to an English native speaker I feel more nervous because I worry that I won't understand them or vice versa…but I feel less anxious when I communicate with my Chinese peers using English

Table 8 Examples of participant responses to questions about teacher influence

Participant E	I do not think my high school teacher had too much significant influence on me…It's not because they are not good teachers…I think this is because I was a science student, so my focus was placed more on subjects like maths
Participant F	I do not sense too much significant influence of my English teachers in high school…because I did not spend much time in high school learning English because at the time my main focus was given to science subjects because they took up a heavier proportion in the examination…I think maybe this is why I did not sense too much of teacher influence

Table 9 Examples of participant responses to questions about peer influence

Participant A	It's more like I might have influenced some of them [peers]…I was the subject rep and my English score in high school was quite excellent. I don't think I have sought any help from my classmates in learning English
Participant B	I do not think I was helped with English learning by my peers because we were really busy with our own studies…and I prefer to learn by myself

These effect sizes not only quantify the magnitude of differences but also highlight the distinct motivational profiles and challenges faced by students in different academic disciplines.

To cross-examine the consistency with the quantitative data, qualitative interviews were carried out. These were used in conjunction with participants' responses to the ten motivational scales in the questionnaire. Consistency assessments and representative participant responses for each category are showcased in the following sub-sections.

When asked about the ideal L2 self, a consensus emerged among participants, with all expressing an aspiration to become more proficient or professional English users. Participant B, for instance, said: *"I think it is important to become fluent in English…Being a fluent English speaker is the main reason why I chose to study the English major"*. This may reflect their awareness of their ideal L2 selves and the motivation derived from their aspiration to become proficient English speakers. Hence, the qualitative data for this category aligns with the high mean values in the quantitative data. Much like ideal L2 self, responses concerning their ought-to L2 selves revealed similarities. All six participants acknowledged the repercussions of failure in English learning and strived to circumvent any potential negative outcomes. For instance, Participant A expressed: *"I should keep improving my English skills otherwise I will not be able to pass various exams."* Similarly, Participant F emphasised the importance of passing English exams: *"I should for sure learn English harder, otherwise how am I going to pass my English major exams? These are important tests for us."* They recognise their ought-to L2 selves and are motivated to attain it. Consequently, the qualitative data for this category concurs with its quantitative counterpart.

Regarding in-school learning experience, the qualitative data reveal both commonalities and disparities in student perspectives. Four participants (A, B, E, and F) expressed negative sentiments towards their university English classes, attributing this mainly to the course content and their English teacher.

Participant D, conversely, appreciated their English course, attributing their positive experiences to the teacher's characteristics: *"I like my English class because my teacher is really keen and humorous, and they can always make class interesting…They always bring different activities and games to the class."* The negative perceptions from the majority of the participants towards English classes align with the low mean values of the corresponding motivation category in the questionnaire. Furthermore, that both science students fault their university English teachers seems to reaffirm the difference in the teacher influence category between the two groups from the quantitative analysis, which is further explored in Section The study. Regarding out-of-school learning experience, all participants indicated they did not dedicate much time to English learning outside class, and they would only invest more time when English exams were near. For instance, Participant C, despite the appreciation of their English class, acknowledged that they had to spend more time on the core modules: *"I like the English class, but it is just one module, and I have five other core modules this semester…I have to focus on them because failing those modules will significantly influence my GPA."* This pattern aligns with the low mean values from both groups. Additionally, the tendency to focus on English learning primarily for exam preparation correlates with the high mean values in the ought-to L2 self category in the quantitative data.

In responses to questions related to international posture, all participants showed an understanding of the role English plays internationally (e.g., Participant A: *"It is one of the most frequently used languages in the world"*). This is in line with the high mean values in the corresponding category of the quantitative questionnaire. In the instrumentality category, all six participants mentioned their plans for further study overseas, implying they need to learn English to live and study abroad. This suggests they are largely motivated by extrinsic factors, aligning with the high mean values in the questionnaire.

In terms of language anxiety, the quantitative data revealed higher anxiety levels among arts students compared to science students. However, the interview data suggests that all participants expressed some level of English usage anxiety, with varied sources ranging from personal traits to environmental factors. This inconsistency between the quantitative and qualitative findings might stem from the limited number of interviewees. Nonetheless, the observation that all four liberal arts students reported language-related anxiety could explain their high mean values on this scale compared to their science counterparts. Gender distribution could be another influence, discussed in detail in Section The study.

Regarding teacher influence, nearly all participants, except Participant D, downplayed the role of their university English teachers in their English learning, highlighted in the in-school learning experience section. However, significant differences in their attitudes towards their high school English teachers were identified in the qualitative data. That is, liberal arts students acknowledged their high school

teachers' impact on their English learning, in contrast to science students who did not, attributing this to disciplinary differences, further explored in Section The study. This divergence aligns with the distinct mean values observed in the corresponding questionnaire category.

For family influence, all participants agreed their parents' attitudes towards English learning influenced their motivation. This finding aligns with the relatively high mean values in the family influence category of the quantitative questionnaire. However, the source of influence varied, with some attributing it to not wanting to disappoint their parents, such as Participant B who said *"...because they [parents] believe learning English is important, and if I am not hardworking enough learn English, I will disappoint them"*, while others attributed it to trust and respect for their parents, such as Participant C's response: *"I think their [parents']attitude towards English do affect mine...especially when I first started learning it...they believe English is important...and part of the reason why I am hardworking in learning English is I respected their opinions"*. This observation may further reflect the high mean values under the ought-to L2 self scale, indicating participants' acknowledgements of potential negative consequences of disanointing their family. Concerning peer influence, none of the participants felt influenced by their peers in English learning, and they didn't sense any help from peers with English studies. This finding appears to echo the low mean values in the corresponding category of the questionnaire.

Factors influencing English Majors' L2LM

The second research question focuses on the elements that significantly impact the English learning motivation of the participants. To explore this, the mean values of the ten categories from the questionnaire were calculated, and the highest mean values for both liberal arts and science students were identified. For better visualisation, the mean values for the ten categories pertaining to the two groups are depicted in Fig. 1.

It is evident from these results that the highest mean values for both groups fall under ideal L2 self (liberal arts: 3.86; science: 3.84) and international posture (liberal arts: 3.83; science: 3.86). This suggests that ideal L2 self and international posture are likely the most significant factors driving the English learning motivation of both groups. In other words, the participants' motivation to learn English primarily stems from their aspiration to become proficient English users and their understanding of the pivotal role
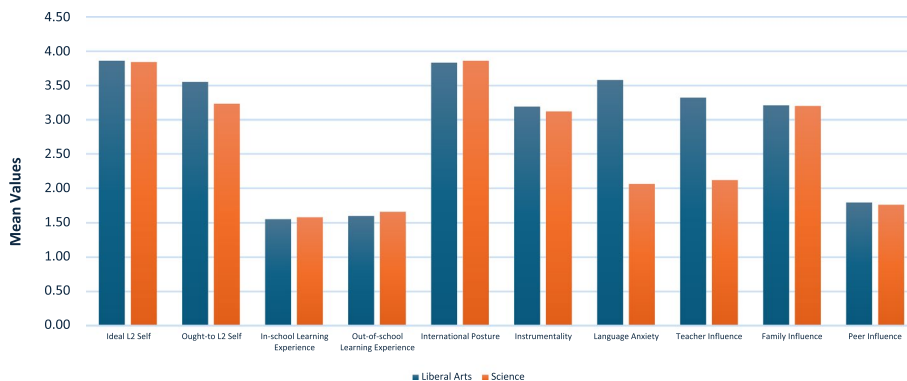

Fig. 1 Mean Values of Motivation Categories for Two Tracks

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English plays on an international scale. The consistency of these findings will be verified through qualitative data in the subsequent section.

To further explore factors influencing the participants' L2LM, interview data were analysed thematically. As a result, three dominant themes emerged from the participants' responses — ideal L2 self, international posture, and instrumentality, hinting at the probable significance of these categories in influencing the learning motivation of the participants.

The theme *ideal L2 self* was vividly portrayed in all participants' aspirations to master English fluently. For instance, Participant E said: *"Sometimes I dream that I am speaking fluent English in a presentation, in front of my classmates…it makes me feel really good… and this kind of feeling motivates me to learn English harder to at certain degree."* This desire is not just about linguistic proficiency but also about the confidence and sense of achievement that comes with it. Similarly, Participant A also expressed their wish to become fluent in English speaking because it could make them *"feel more confident…in terms of both personal growth and academic performance".* This goal to enhance personal and academic confidence through English fluency further underscores the multifaceted impact of individual growth on L2LM. In Participant B's responses, the image of a fluent English speaker was also captured: *"I watch western TV series in which many Asian actors speak perfect English as their L2…I always imaged myself as someone like them, who speaks fluent English in front of people."* These narratives collectively reflect a strong motivational drive rooted in the participants' envisioned future selves as proficient English users, highlight the deep personal and professional significance they place on English fluency.

The theme international posture reflects participants' keen awareness of English as a pivotal global language. Participant F, for instance, viewed English as a gateway to international engagement, believing that proficiency would enable them to contribute meaningfully to global conversations: *"I see English as a bridge to the wider world. If I can speak English well, I would be able to participate in international dialogues and have more understanding of global issues."* This sentiment is echoed by Participant C, who highlighted English as a universal language that facilitates a deeper understanding of diversity: *"English is a common language in the world. It is also a key to understanding different cultures, viewpoints, and values."* Their experience of English's omnipresence in their academic and personal life underscores its global influence. Their immersion in English, both in academic settings and through media consumption, illustrates how English serves as a vital tool for navigating a global interconnected world. This widespread influence of English in various aspects of life reinforces its perceived importance among the participants, driving their motivation to learn and master the language.

The final key theme, instrumentality, strongly resonates with participants' aspirations for future educational pursuits and career advancements. In this transnational university setting, a significant portion of students, including the interviewees, expressed a clearer intention to pursue higher education in English-speaking countries. This ambition necessitates not only academic fluency in English but also practical application in daily life, as highlighted by Participant C's aspiration to continue to study in the UK: *"Learning English is important to my academic plans. I plan to study for a master's degree in the UK…and being fluent in English is key for me to both study and live there."* The

importance of English is also associated with the participants' immediate academic needs. Participant A, for instance, emphasised that *"English is important to my academic performance in all my courses…I need to read many academic papers written in English."* Furthermore, the role of English in the job market is a critical aspect of instrumentally, reflected in Participant D's observation about the job market in China:

> *"These days in China there are increasing international corporations, offering competitive salary and staff benefits…My goal would be to work for such a company… Many of these companies would prefer you to have a decent level of English to contribute to their international lines…So, from this perspective, I would definitely need to improve my English skills to make myself competitive when I start to look for a job."*

This viewpoint illustrates a pragmatic understanding of English as an essential tool for achieving a competitive edge in the job market.

The illustration of the three key themes in the study—ideal L2 self, international posture, and instrumentality—provides a comprehensive understanding of the participants' perceived strongest motivations for learning English. The theme ideal L2 self reflects aspirations for personal and professional English proficiency, influencing learning motivation. international posture emphasises the global significance of English, with participants recognising it as a bridge to international engagement and cultural understanding. instrumentality focuses on the practical utility of English for academic success and job market competitiveness, highlighting its role in immediate academic needs and future career goals. This observation aligns with the high mean values yielded from the quantitative data analysis. The themes and examples of associated thematic codes are presented in Table 10 below.

Discussion and implications

This study contributes significantly to the field by systematically examining L2LM among liberal arts and science undergraduate English majors within an EMI context, across ten motivational categories. Notably, it uncovers that both student groups exhibit high mean values in key areas such as ideal L2 self, ought-to L2 self, international posture, and instrumentality. These findings underscore the complex interplay of personal aspirations, cultural factors, and academic disciplines in shaping language learning

Table 10 Examples of themes and codes

Theme	Codes
Ideal L2 self	Master the language
	Speak fluent English
International posture	International influence
	Wide use of English
	Global language
Instrumentality	Studying overseas
	Reading English literature
	Finding a job

Although the coding process was inductive without a pre-designed framework, the codes and themes seem to fit the 10-category framework demonstrated in Table 2 well

motivation. By comparing these motivational constructs across liberal arts and science students, the study illuminates the nuanced ways in which disciplinary backgrounds influence L2LM, thereby extending the existing literature into new, interdisciplinary contexts. This research thus offers a comprehensive understanding of L2 motivational dynamics in a previously underexplored setting, providing valuable insights for educators and policymakers in EMI environments.

In the present study, both student groups exhibited a strong motivation to improve their English proficiency, indicated by a high mean score on the ideal L2 self scale. This motivator, likely stemming from a desire to "reduce the discrepancy between their actual selves and ideal selves" (Dörnyei, 2009, p. 29), is accentuated in the shift from EFL to EMI contexts. The shift elevates the functional utility of English but also alters the motivational and identity-related aspects of language learning (Henry & Goddard, 2015), transforming it from a mere subject into a core medium of instruction and communication. Consequently, English's relevance in personal and professional growth is amplified. Previous studies, including Liu et al. (2012) and Yin (2017), underscore the effectiveness of ideal L2 self in motivating English language learning, which could be further amplified in EMI contexts where English proficiency aligns with learner development. Moreover, the immersive nature of EMI can lead to a more integrative form of this motivator, where students develop a stronger connection with the language and its associated community (Iwaniec & Wang, 2022). This connection could enhance their ideal L2 selves by aligning English use with their social identities. That is, the constant interaction in English in EMI settings fosters learners' connection to the English-speaking community (Du & Jackson, 2018), thereby intensifying their desire to attain an ideal L2 self that is proficient, confident and socially integrated.

In the EMI setting, where academic success is closely linked to English proficiency, ought-to L2 self emerges as a dominant motivator. Relocating from an EFL to such an EMI context, students perceive a direct link between their English language skills and their academic achievements (Yuksel et al., 2023). As illustrated in Section L2LM Research in the Chinese context, the students recognised that their ability to succeed academically and avoid negative outcomes like failing exams is heavily dependent on their English skills. This transition increases the pressure on students to improve their English, leading to a more pronounced ought-to L2 self. However, as Lv and Yang (2013) suggest, the dynamics of ought-to L2 self are complex and can vary significantly across different educational and disciplinary contexts, indicating a need for more nuanced, cross-disciplinary research to fully understand these motivations in diverse settings.

For international posture, the high mean values across both student groups suggest a strong interest in foreign cultures and recognition of English's international significance. This is likely mediated by the socio-cultural dimension that EMI settings bring into their educational experiences, impacting students' perception of English (Kuteeva, 2020). In such a context, students are exposed to diverse cultural perspectives, often through English-mediated interactions with peers, faculty, and academic content from various global contexts. This exposure can deepen their understanding of English as a conduit for cross-cultural communication and international understanding, further solidifying their international posture towards English. Yashima (2002) highlights the importance of international posture in Asian educational contexts, which may be stronger in EMI

settings due to direct engagement with English. While Lv and Yang (2013) suggest variations in students' international posture due to socio-educational backgrounds and self-pursuit, EMI's immersive nature could positively influence students' attitudes towards English and therefore enhance their L2LM. More longitudinal research is needed to observe students' motivational shifts over time to establish a more in-depth understanding of how L2LM can be mediated by socio-cultural factors in such settings.

Both groups also scored high in instrumentality, indicating significant extrinsic motivations like studying abroad or job prospects. This observation is consistent with previous research findings discussed above, although disciplinary differences were not always taken into account, highlighting a need for more nuanced research in the future. Lastly, family influence emerged as a significant factor in the present study, suggesting that parental attitudes towards English may impact the participants' progress in English learning. This finding contrasts with the study by Gao et al. (2003), hinting at the influence of diverse family dynamics and socio-cultural contexts. More cross-cultural studies are needed to explore this aspect further.

Alongside identifying commonalities between the two groups, the study also explored significant differences in English learning motivation between liberal arts and science students. The findings reveal distinctions in terms of ought-to L2 self, language anxiety, and teacher influence. For the ought-to L2 self scale, both groups exhibited high mean values, yet a notable difference emerged, with liberal arts students more driven by the desire to avoid negative consequences. This disparity may stem from their educational background and the cultural perception of English within the Chinese education system. As English is traditionally associated more with the liberal arts stream, students from this background tend to engage more in language-focused coursework during secondary school (Yuan & Gao, 2015). They might carry this emphasis into their university studies and this enduring focus could heighten their awareness of the potential negative outcomes of not mastering English, such as academic underperformance. In contrast, science students, with less emphasis on language in their prior education, may feel less pressure regarding English proficiency. This finding aligns with Yin's (2017) study, which identified significant differences in the ought-to L2 selves between the two groups. Nevertheless, Yin did not find significant motivation in science students under this category. Lin (2017) also noted substantial differences in the ought-to L2 selves between these student groups, however with science students appearing more motivated by this factor than liberal arts students. Such discrepancies might be attributed to individual variances (Kozaki & Ross, 2011), as students may differ in their desire to, for instance, meet parental expectations or avoid adverse consequences.

Liberal arts students displayed significantly higher language anxiety than science students, indicating a greater degree of negative emotions associated with English learning. This aligns with Yin's (2017) findings but contrasts with Zhang and Zhang (2015), who noted higher anxiety in science students, as well as with Liu (2020) who identified no significant anxiety differences between these two groups. These contrasting findings might be due to varied, complex factors associated with language anxiety, such as exam-oriented educational culture, a lack of linguistic confidence and limited L2 resources and environments (Suparlan, 2021). Gender distribution may also play a role, as studies have shown that female learners often experience higher language anxiety compared to males

(e.g., Geçkin, 2020). In the present study, the liberal arts group predominantly consisted of females, while the science group had more males, potentially explaining the higher anxiety level among liberal arts students.

However, it is important to note that some studies have also found no differences or reversed trends in language anxiety between male and female learners (e.g., Aytaç-Demirçivi, 2020). The mixed results point to the complex nature of learners' L2 motivational system, where various factors are intertwined. Thus, studies examining language anxiety with other variables than gender or disciplinary background might yield significantly different results. To further our understanding of L2LM, more research cross-examining various motivational variables is needed to explore how L2LM is mediated by these factors.

The final divergent factor, teacher influence, shows a notable difference between liberal arts and science students, indicating stronger motivation from English teachers in the former group. Similar to ought-to L2 self, the difference could also be attributed to the varied disciplinary backgrounds of the students. Liberal arts students might perceive greater importance in their English teachers' influence due to the language-focused nature of their studies. In contrast, science student might prioritise subjects like mathematics and therefore assign less importance to English and, by extension, to their English teachers. This view was evident in Participant E's and Participant F's responses to relevant interview questions presented in Section L2LM Research in the Chinese context. Building on this observation, the findings on teacher influence carry important implications for educational strategies, particularly in addressing the differing attitudes towards English among students across various disciplines. Given the global importance of English, it is crucial for educational institutions to emphasise its relevance across all disciplines (Qian & Cumming, 2017). This can involve adopting more interdisciplinary teaching methods incorporating English in ways that resonate with science students' interests and academic focuses, such as through scientific texts or English-medium science discussions (Thakur & Elahi, 2021). Such measures are crucial for preparing students across disciplines for the demands of a globally interconnected world, ensuring they don't overlook the significance of English proficiency in their personal and professional pursuits.

The difference in teacher influence observed in this study contrasts with Yin (2017), where English teachers significantly influenced both liberal arts and science students, suggesting the impact of specific teacher characteristics on student motivation. This is further supported by Farmer (2018), who emphasises the role of teacher attributes in shaping learning motivation. As highlighted in Section L2LM Research in the Chinese context, the qualitative analysis revealed that students often link their L2LM to the specific characteristic "conscientiousness" of their English teachers, indicating that attributes like dedication, reliability and attention to student needs are highly valued by the participants. This connection has been well-established in previous studies (e.g., Khalilzadeh & Khodi, 2021; Sabet et al., 2018), further underscoring the need for teacher education programmes to enhance these qualitative of teachers. For these programmes, providing training that focuses on enhancing teacher-student interactions, responsiveness and personalised feedback can be instrumental (Williford & Pianta, 2020). Additionally, it is essential for schools to create environments that support and encourage

conscientious teaching practices (Kraft & Papay, 2014). This could involve collaborative workshops, mentoring programmes, and regular feedback mechanisms that encourage and recognise teachers' efforts in contributing to good practices. By prioritising these aspects, educational institutions can foster a more effective (language) learning environment where teachers can continually explore their pedagogical practices and motivate students.

In addition to teacher education, implications are also proposed to EMI/transnational institutions for enhancing students' English language learning experience. Given the significance of ideal L2 self and instrumentality to L2LM, EMI programmes should integrate English learning with students' personal and professional aspirations, making English proficiency a key part of their academic success and identity formation. This could be achieved in several ways. To enhance students' language skills, teachers are encouraged to focus more on English's communicative functions (Hu, 2010) and provide continuous positive feedback. It facilitates maintaining a supportive learning environment (Dörnyei & Muir, 2019) and validating students' self-image as proficient English users (Rubio, 2014). In addition, providing additional career-oriented ESP (English for Specific Purposes) training could facilitate students in developing an ideal L2 self aligned with career goals. Universities should also endeavour to create opportunities for student projects that relate to real-world scenarios in students' fields of study. This could help develop students' academic and practical skills in English and their specific fields of study, thereby enhancing their employability and competitiveness for their future aspirations.

Recognising ought-to L2 self as a key motivator, programme developers should manage students' ought-to L2 selves pressure by balancing language proficiency with other academic demands. For instance, teachers can set challenging yet attainable learning objectives, helping students avoid frustration from potential failure while fostering a sense of achievement (Kormos & Wilby, 2019).

The prominent theme of international posture highlights the need to leverage the EMI's immersive nature for deeper language and cultural connections. While exploring pedagogical innovations is key to enhancing L2LM, promoting learner engagement in intercultural interactions is also vital for sustaining continuous and positive dialogue (Jackson, 2015). This can be achieved by establishing language exchange partnerships or peer-support schemes (Campbell, 2011), where students from different backgrounds are paired to facilitate cultural exchange. Developing multimodal platforms for learner communication could also foster intercultural communication (Lin et al., 2017), where students are encouraged to participate in discussion forums and group projects that require collaboration with peers from diverse backgrounds. Educational developers should also ensure curricula encompass diverse perspectives and contents, reflecting a range of cultural experiences and viewpoints (Vo, 2017).

Conclusion

Guided by the L2 Motivational Self System theory, the study investigated the motivational differences between English majors from liberal arts and science disciplinary backgrounds in an EMI setting. Key findings indicate that both groups of students are strongly motivated by factors including ideal L2 self, ought-to L2 self, international

posture, and instrumentality. Notably, liberal arts students were found to be more affected by their ought-to L2 selves, language anxiety, and teacher influence compared to their science peers. The findings shed light on the less explored area of L2LM for learners relocating from EFL to EMI educational contexts, incorporating a socio-educational dimension to understand the link between L2 learners' motivation and their educational backgrounds. Despite its well-designed methodology and the generation of positive results, the study faces limitations, necessitating further research on L2LM in various educational settings. The brief data collection period limits the ability to capture the dynamic nature of motivation over time (Dörnyei & Ushioda, 2011). Future research could benefit from a longitudinal research design which enables researchers to examine learners' motivational shifts over time.

Furthermore, while Dörnyei's (2005) L2MSS is a well-established framework, the rapidly evolving field of motivational research introduced new theories focusing on different aspects of learner motivation beyond motivational selves and learning experience. Future studies could benefit from adopting newer models like the Directed Motivational Currents (Dörnyei et al., 2016), which emphasises the socio-dynamic nature of motivation. Since such newer models have been primarily discussed on a theoretical level (Peng & Phakiti, 2022), empirical research is needed to translate these concepts into practical educational strategies and practices.

L2LM is dynamic and continually adapts to learners' changing contexts, necessitating ongoing study considering various influencing factors. The present study, through a socio-educational lens, contributes to our understanding of L2LM of learners from different disciplinary backgrounds in EMI educational settings. As EMI and transnational programmes become more prevalent in the Chinese educational system, further research exploring a broader range of factors beyond disciplinary differences will provide a more comprehensive understanding of how L2LM is mediated within EMI settings, advancing the field of motivational research.

Supplementary Information

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Supplementary material 1.

Authors' contributions
ML designed and conducted the research, collected and analysed all data, and wrote and revised the manuscript.

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Availability of data and materials
The data that support the findings of this study are available from the corresponding author, [Li, M.], upon reasonable request.

Declarations

Ethics approval and consent to participate
All research activities received institutional ethical approval from the ethics committee of the Moray House School of Education and Sport at the University of Edinburgh, in accordance with the University's Research Ethics Policy. Informed consent to participate and publish has been given by the participants. For the purpose of open access, the author has applied a Creative Commons Attribution (CC BY) licence to any Author Accepted Manuscript version arising.

Competing interests
The authors declare no competing interests.

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