Mapping Motivational Networks in EFL: Exploring the Impact of Additional L2 Lessons

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Abstract

Learning a second language (L2) is dependent upon numerous external and internal factors, among which motivation plays a relevant role. In fact, motivation has been recognized as crucial in the L2 learning process (Ushioda, 2012). Such has been its importance that interest in L2 motivation has led to the development of theories such as the L2 motivational construct, and the L2 motivational self system (Dörnyei, 2005, 2009). Nevertheless, despite the academic focus on L2 learning motivation (Dörnyei & Ushioda, 2013), the impact of additional L2 lessons on students already engaged in formal L2 instruction at an official educational level (e.g., Higher Education) remains vastly underexplored. Thus, this study aims to bridge this gap by analyzing the differences between 118 undergraduate EFL students who attended extra L2 lessons and those who did not. Considering the complex nature of the motivational construct, a Bayesian network analysis was used, categorizing motivations into two modules based on attendance of additional L2 lessons. This allowed us to observe the different factors of motivation as a whole construct, and not individually. The findings revealed that students who attended extra lessons are internally motivated toward self-improvement, whereas those who do not attend extra L2 lessons are influenced by external pressures and career aspirations.

Keywords: *L2 Motivation, Extra Lessons, External Factors, Network Analysis*

Introduction

Motivation represents a critical construct in second language (L2) learning, exerting a profound influence on learner behaviors, engagement, and eventual achievement (see Liu, 2024, for a comprehensive review; Dörnyei, 2019). Over recent decades, research has shifted from traditional socio-psychological perspectives to a more detailed understanding of motivation as a dynamic, context-dependent system shaped by learners' self-concepts and visions of themselves as competent L2 speakers (Dörnyei, 2009; Ushioda, 2009). Models like Dörnyei's

(2005, 2009) L2 Motivational Self System have highlighted how an idealized future self-image can motivate investment in the language learning process.

While this framework has gathered substantial empirical support across diverse educational contexts (Al-Hoorie, 2018), recent research has probed how motivational dynamics might be altered by intervening factors like resilience (Kim & Kim, 2021), social positioning (Darvin & Norton, 2017), and engagement with informal language learning opportunities beyond formal classroom instruction. Similarly, motivational dynamics have been explored in several language skills, for instance, L2 writing and feedback (see Cen & Zheng, 2024), or L2 motivation from the perspective of languages other than English (e.g. Yang & Liang-Itsara, 2024). Despite the vast body of research in L2 motivation and the variables explored, few studies have directly examined the potentially differential impacts of supplemental language lessons on the configural patterning of motivational variables.

The current study aimed to address this gap by employing novel Bayesian network analysis techniques to model the interrelations and centrality of key motivational constructs like the ideal L2 self, ought-to L2 self, and L2 learning experience (Dörnyei, 2009). From a critical perspective, these variable networks were compared between university students attending additional English as a Foreign Language (EFL) lessons and those limited to formal curricular exposure.

Literature Review

The L2 Motivational Self system

Research on L2 acquisition has increased its focus on motivation as a fundamental aspect and predictor of certain types of learner behavior and outcomes in L2 learning, conditioning successful L2 acquisition (Ushioda, 2020). Motivation in the L2 learning process is regarded as one of the most important variables and one of the relevant aspects differentiating first language (L1) acquisition from L2 learning (Ushioda, 2011). In fact, motivation is an even more critical factor in adult L2 learning, as motivation or demotivation can certainly make a difference in how the learning process unfolds (see Ushioda, 2010). This perspective was noticed by Gardner and Lambert (1972) in one of their seminal works, since learners' attitudes towards the L2 community and their ethnocentric orientation would undoubtedly influence their motivation to learn the language. Hence, learners may be motivated towards a more integrative orientation, in which their interest is sincere and personal, and an instrumental orientation, in which the practical value and advantages of learning an L2 are manifested. This is why L2 motivation shares common characteristics with motivation in other domains, as it is a construct that is part of an evolving complex dynamic system (Ushioda, 2011).

Initially, research on L2 motivation was centered on socio-psychological foci (Crookes & Schmidt, 1991), but it began to shift away from this approach towards cognitive theories of motivation (Dörnyei, 1994), focusing on the situated analysis of motivation in classroom settings (Ushioda & Dörnyei, 2012). From a more global perspective, Dörnyei (1994) and Williams and Burden (1997) proposed frameworks for the conceptualization of motivation, which integrated traditional concepts with newly conceived ones, such as self-efficacy and intrinsic or extrinsic motivation (see Noels et al., 2000). Unsurprisingly, the role of L2 motivation has been tightly connected with research on learner cognition, as well as affective processes and social dynamics (MacIntyre & Gregersen, 2012). Along this line, Dörnyei's L2

Motivational Self System (L2MSS) introduced the concept of the ideal L2 self, which shapes motivation towards future visions of proficiency (Dörnyei, 2009). In the last decade, L2 motivation research has endeavored to explore further this concept of the ideal L2 self by integrating the dynamic interaction between this self and the context (Ushioda, 2009). In fact, individual difference variables like motivation are considered as part of a larger, interconnected system, forming a *network* (Dörnyei, 2009).

The impetus for the accumulation of more evidence has been reflected in the ever-increasing interest in the reconceptualization of the L2 motivational self system (L2MSS, henceforth) as theorized by Dörnyei (2005, 2009). This model has served as a foundation for most research in L2 motivation, and has drawn on the possible selves theory (Markus & Nurius, 1986), self-discrepancy theory (Higgins, 1987) and the socio-educational model (Gardner, 2019). The L2MSS is a construct that involves three different components: (1) ideal L2 self, (2) Ought-to L2 self, and (3) L2 learning experience (Dörnyei, 2009). Regarding the ideal L2 self, it represents a desirable future self-image as a proficient L2 user and serves as a key motivational factor, as learners aspire to match this self-concept. The Ought-to L2 self, on the other hand, reflects the attributes that learners believe may be necessary to meet external expectations and avoid negative outcomes. This aspect focuses more on the obligations and duties perceived by the learner, sometimes leading to conflicting motivations. Finally, the L2 learning experience encompasses executive motives related to the immediate learning environment, and it might be the case that it impacts the learner's day-to-day motivation and engagement in L2 activities (Dörnyei, 2019).

The L2MSS has been empirically tested, and its utility has been robustly supported across diverse educational settings and cultural contexts. Extensive research has demonstrated the broad applicability of this model in understanding L2 motivation. For instance, Al-Hoorie (2018) conducted a meta-analysis involving 32,078 L2 learners, confirming that the three components of the L2MSS were significant predictors of learners' effort. However, weaker associations were observed for actual achievement metrics, highlighting the variability in its impact on measurable performance outcomes. Studies from China have also attempted to verify and validate the model among various populations of L2 learners, reaching similar conclusions regarding its predictive power and the strength of its components in relation to learner engagement and achievement. Other more recent studies, such as Wang and Wei's (2023), found that Chinese post-00s college students demonstrate high motivation to learn a second foreign language, driven primarily by their ideal self and learning experiences, underscoring the applicability of Dörnyei's model in multilingual contexts. Similarly, Yamagami (2023) explored the relationship between L2MSS and attitudes toward translanguaging, revealing that students' perceptions of their English proficiency significantly influence their motivation and preference for translanguaging in English classes.

Research in the area of L2MSS has presented several challenges, primarily due to mixed and sometimes conflicting results across empirical studies. Loan (2023) highlighted that while self-reported motivation is a good predictor of intended learning efforts, it does not consistently correlate with actual L2 achievement, suggesting the need for resilience and persistence as critical factors in maintaining motivation. These inconsistencies have spurred further research and methodological shifts, raising concerns about the discriminant validity of L2MSS scales. Discriminant validity refers to the extent to which scales accurately differentiate between

related constructs, such as the ideal L2 self and linguistic self-confidence. This situation has led to calls for more rigorous psychometric evaluations to ensure the scales are precisely adjusted (Al-Hoorie et al., 2023). In a similar vein, studies have indicated that L2MSS may lack the necessary flexibility to account for L2 demotivation, suggesting that incorporating additional psychological constructs or contextual factors might be essential (Hill & Pottier, 2018).

Dörnyei's L2MSS has significantly advanced our understanding of motivational dynamics in language learning. Extensive empirical evidence underscores the motivational power of the Ideal L2 Self. Studies like Jang and Lee (2018) have demonstrated that a well-defined Ideal L2 Self strongly influences both the adoption of effective learning strategies and the quality of language performance, suggesting that this component leads to better planning and execution in language learning tasks. However, Papi and Khajavy (2021) provide insights into the complex role of the Ideal L2 Self, suggesting that while it can motivate action, it may not always lead to deep, sustained engagement or high achievement.

On the other hand, the Ought-to L2 Self often embodies a prevention-focused motivation, which can result in a more anxious and less autonomously driven learning experience (Papi & Khajavy, 2021). The interaction between these two self-guides within the L2MSS helps us gain a deeper understanding of how different forms of motivation can either synergize to enhance the language learning process or conflict, potentially undermining learner engagement. Additionally, research conducted in various global contexts, such as studies by Brady (2019) in Spain and Chen (2012) in Taiwan, consistently highlights the Ideal L2 Self as a more robust predictor of language learning success. These findings suggest that motivational strategies that enhance learners' vision of their Ideal L2 Self, such as visualization exercises and goal-setting activities, can be particularly effective in promoting L2 learning.

In the end, this visualization serves as a catalyst for personal and societal goals in L2 learning. Such objectives significantly influence the degree of investment L2 learners may exhibit (Darvin & Norton, 2023), leading us to explore the concept of investment, which integrates socio-cultural contexts and power dynamics, and their interaction with the construct of motivation. Thus, this shift represents a crucial development from solely internal motivational constructs towards a more dynamic interplay of social factors in L2 learning.

Investment in L2 Learning

The conceptualization of investment by Norton (1995) served as a critical counterpoint to the construct of motivation, as it challenged the dual view of L2 learners (Ushioda, 2020). Traditionally, L2 learners had been categorized based on their cognitive and psychological orientations, with the main focus placed on a series of learner individual differences such as aptitude, motivation, and self-efficacy (Norton, 1995). At the time, research characterized learners as having fixed personalities and motivation – a clearly rigid perspective of these individual variables – which aligned with product-oriented methodological trends. Norton's (1995) challenge of binary notions of L2 learners highlighted the intricate nature of identity formation and negotiation that occurs through language and social interaction. The concepts of identity and investment are intrinsically linked, as investment reflects learners' aspirations for increased cultural capital and social power (Darvin & Norton, 2017). In the context of L2 learning, learners' investment is influenced by their sense of belonging and agency within the

learning environment (Norton & Morgan, 2020). In this sense, investment serves as a springboard for the examination of learners' negotiation of resources and assertion of identities within social structures. Recent studies have emphasized the role of agency and social acceptance in driving learners' investment in L2 learning (Jang, 2023).

Earlier views assumed that learners could opt for their own interaction conditions; however, the concept of investment has revealed that learners may not be able to choose given the influence of power dynamics (Dickinson, 1995). Such power is often held by gatekeepers like native speakers, who control linguistic norms and entry conditions, likely conditioning and shaping the manner in which learners' opportunities to participate emerge (Darvin & Norton, 2017). Recent findings highlight the importance of supportive learning environments to mitigate anxiety and promote positive attitudes towards L2 learning (Di Napoli et al., 2023). These environments can help counteract the restrictive influence of power dynamics by providing a more inclusive and encouraging space for learners. The aforemendionted differentiation of power results in a perpetual struggle for learners, as continual negotiation of identity is required. In fact, despite possessing communicative competence, learners may still face exclusion or be deemed inadequate without this critical legitimacy conferred by those in positions of power. Research on investment has traditionally relied on qualitative methods, allowing for deeper insights into how learners perceive their identities, power dynamics, and legitimacy (Norton & De Costa, 2018). Engagement in online multicultural exchanges has also been shown to improve learners' self-perception and motivation, demonstrating the dynamic nature of L2 investment (Skidmore, 2023). These exchanges provide learners with opportunities to build confidence and enhance their communicative skills in diverse settings.

Investment critically examines the conditions that shape learners' participation and engagement, focusing on the dynamism and evolving nature of investment in L2 learning (Darvin, 2018). Furthermore, innovative approaches such as changing the smartphone system language to L2 have been shown to significantly enhance vocabulary acquisition and motivation (Ye & Shi, 2023). In line with this, the impact of external actions, such as receiving additional L2 lessons, may highly contribute to both the L2MSS framework and, in turn, to investment. These aspects will be explored further in the section 2.4. Before that, it must be acknowledged that L2 motivation can be influenced by a series of external and internal factors such as resilience and the educational context.

External and Internal Factors Influencing L2 Motivation
Among the many factors influencing L2 motivation, resilience and persistence stand out as highly relevant within the framework of our study. Resilience has been found to significantly influence L2 learning, motivation, and L2 proficiency (Kim & Kim, 2017). Indeed, resilience in L2 learning constitutes a vital psychological resource that affects motivation and educational outcomes. Conceptually, resilience entails the capacity to endure and adapt positively in the face of challenges and adversities during the L2 learning process. Resilience is not just about withstanding stress but also encompasses developing mechanisms to manage and transform negative experiences into opportunities for learning and growth (Luthar et al., 2000). In the context of L2 learning, resilience may positively contribute to maintaining and enhancing motivation, preventing discouragement and dropout.

Previous research has examined how resilience may predict other factors in L2 learning. For instance, Kim et al. (2017), in their study with undergraduate Korean students, found that L2 learning demotivation has a stronger impact on L2 proficiency than L2 learning motivation, and that resilience plays a crucial role in L2 proficiency, both directly and indirectly. In another study, Shin and Kim (2017) observed that resilience positively impacted intrinsic motivation and the ideal L2 self, while negatively impacting demotivation. Similarly, Kim and Kim (2020) highlight that resilience correlates with higher motivational levels and better language outcomes by enhancing students' ability to cope with and rebound from setbacks encountered during language learning. Additionally, a study by Zhang (2022) demonstrated that resilience significantly predicts academic motivation among Chinese EFL learners, supporting the notion that resilience can lead to enhanced engagement and better achievement in language learning settings.

Recent studies further emphasize the importance of resilience and motivation in L2 learning. For example, resilience was found to be positively associated with self-efficacy and autonomous motivation, which are crucial for overcoming challenges in language learning (Abdolrezapour et al., 2023 or Zhang, 2022). Another study highlighted that resilience, along with engagement and grit, significantly predicts L2 learning outcomes, pointing to the multifaceted role of resilience in the learning process (Wu et al., 2024). Furthermore, the role of resilience in fostering L2 learning motivation and proficiency has been confirmed in a study involving Korean college students, showing that resilience enhances motivated behavior and proficiency (Kim & Kim, 2021; Kim et al., 2017).

Educational settings play a crucial role in fostering or impeding the development of resilience among language learners. These settings range from the immediate classroom environment to broader institutional policies. For example, classroom dynamics that include supportive teacher-student interactions, peer collaboration, and positive feedback mechanisms can strengthen learners' resilience by promoting a sense of belonging and self-efficacy. On a larger scale, educational policies that provide resources, psychological support services, and curricula that acknowledge and address the challenges of L2 acquisition contribute to a supportive learning atmosphere that cultivates resilience (Urdan & Schoenfelder, 2006).

Our observations thus far indicate that the components of the L2MSS are closely linked to how L2 learners envision themselves as prospective L2 users. Crucially, this conception appears to be influenced by factors pertaining to the classroom environment, the learners' future prospects, as well as psychological constructs like resilience, which are indeed associated with a potential need to acquire L2 proficiency (e.g., for professional purposes).

Impact of Additional L2 Lessons on L2 Motivation and Investment
As discussed in the preceding sections, the L2MSS has gained significant prominence in recent decades due to the deconstructed view of motivation as comprising several defining components. In this regard, studies by Moskovsky et al. (2016) and Loan (2023) investigated the L2MSS and found that while self-reported motivation appeared to be a predictor of intended learning efforts, it did not consistently correlate with actual L2 achievement. This observation may suggest that additional L2 lessons need to be strategically aligned with learners' motivations to translate motivation into tangible learning outcomes. Indeed, Moskovsky et al.'s (2016) research highlighted the importance of the ideal L2 self for motivated behavior and L2

proficiency. Similarly, Lee et al. (2018) explored how undergraduate students in Hong Kong were affected by L2 teachers' motivational efforts, and how these could extend beyond the classroom setting. Their findings revealed that enhanced in-class engagement and efforts to minimize linguistic mistakes were linked to the use of motivational strategies. Although not directly related to additional L2 lessons, this might indicate that lessons could potentially serve as external motivational strategies fostering L2 learning.

Recent research highlights the significant impact of out-of-class L2 lessons on learners' motivation and proficiency, while also reviewing studies that examine related aspects of L2 learning motivation. Lin (2022) demonstrated that structural relationships among L2 motivation, out-of-class informal learning, and oral proficiency emphasize the importance of out-of-class L2 contact in enhancing L2 oral proficiency. Similarly, a study by Li et al. (2022) showed that an intensive English reading course significantly strengthened the L2 motivational self system among Chinese university English majors, suggesting that targeted interventions outside the classroom can enhance motivation and learning outcomes. In her study, Wei (2023) explored the effects of AI-mediated language instruction, which showed the extent to which such approaches positively impact English learning achievement, L2 motivation, and self-regulated learning, by way of offering personalized learning experiences that boost motivation and proficiency. While not all of these studies are exclusively focused on additional L2 lessons, their findings collectively contribute to shedding light upon the potential benefits of integrating supplementary L2 lessons into language learning curricula to enhance motivation and learning outcomes.

As anticipated in previous sections, the role of persistence and resilience in L2 learning is inextricably linked to motivational factors. For instance, a study by Kim and Kim (2017) identified persistence, influenced by resilience, as a fundamental factor impacting motivated behavior and L2 proficiency among secondary L2 students. Thus, resilience emerges as a relevant factor in maintaining motivation and achieving L2 proficiency, which is essential when considering the effects of additional L2 lessons. Corroborating this, Alrabai and Alamer (2022) found that learner effort predicted L2 resilience, emphasizing the need for resilience-building strategies in L2 teaching and learning. Such resilience could be incorporated into additional L2 lessons to foster motivation and develop coping mechanisms. With resilience and motivation as central variables, Kim and Kim (2020) investigated their structural relationship and found that resilience impacted motivated behavior and L2 proficiency. Consequently, receiving extra L2 lessons could significantly contribute to learners' motivation and proficiency levels.

Given that additional L2 lessons could be considered informal L2 learning – as formal L2 learning would be the official lessons at educational institutions – Saito et al. (2018), in their study with high school EFL learners, found that regular and frequent L2 use, paired with positive emotions that increased motivation, significantly improved L2 comprehensibility. These findings may suggest that additional informal L2 interactions, such as those occurring in the context of extra L2 lessons, could enhance motivational constructs like the ideal L2 self. However, the extent to which these additional L2 lessons may be connected with motivation largely depends on their structure and specific engagement strategies used, as Sulis (2020) highlighted in their study, indicating the non-linear and dynamic relationship between motivation and engagement in L2 learning. This suggests that additional L2 lessons may have

varying impacts on motivation. This aligns with Darvin and Norton's (2023) study, which discussed the alignment of learners' motivation and investment with L2 practices. They identified that for additional L2 lessons to have a maximized impact, they should be effectively integrated into the learners' overall educational and personal goals.

Despite the significant focus on motivational factors in L2 learning, including resilience and investment, there appears to be a noticeable gap in this niche of research. While previous studies, such as Lee et al. (2018), have demonstrated how motivational strategies can enhance factors such as self-efficacy and goal orientation, additional L2 lessons have not been considered as a central variable. Hence, more empirical evidence is required to observe how attending or not attending these extra L2 lessons may affect motivation. Equally important, most of these studies on L2 motivation often overlook the interconnectedness of these factors. Thus, our study intends to bridge this gap by specifically focusing on the impact of extra L2 lessons in higher education settings, an area that has received limited research attention. Additionally, this study aims to contribute methodologically by closely examining how extra L2 lessons affect different components of motivation according to the L2MSS framework, utilizing a novel statistical technique – a newcomer to the field of L2 research – Bayesian network analysis.

Thus, this study is guided by one research question:

RQ₁: How do the network structures and interactions among motivational constructs differ between students who attend additional EFL lessons and those who do not?

Method

Context and Participants

Our cohort of participants consists of 118 undergraduate studentsfrom programs in Early Childhood Education and Primary Education at a medium-sized Spanish university. These students participated voluntarily, and gave their consent through an ethically conformed consent form. Participants were sampled from two intact classes to which a questionnaire was administered, reflecting a convenience sampling method. These students are engaged in a university curriculum that mandates two hours of EFL instruction per week. These weekly sessions are divided into one practical lesson focused on speaking and listening skills, and one theoretical lesson that covers grammatical and vocabulary development.

The participants' proficiency in English was assessed using the Oxford Placement Test (OPT), which is a standardized measure widely recognized for its accuracy in evaluating language skills. The average score obtained by the participants was 65 (SD = 4), placing them within the B1-B2 range of the Common European Framework of Reference for Languages (CEFR, 2018). This classification indicates that they possess an intermediate level of English, capable of dealing with most situations likely to arise whilst travelling in an area where the language is spoken.

Research Design

Our study employed a cross-sectional design to explore the relationship between the attendance of additional EFL lessons and various motivational constructs within the framework of L2 learning. Participants were first categorized based on their response to a sociodemographic

question embedded in the OPT, which inquired whether they attended additional EFL lessons. This categorization served as a crucial grouping variable in our subsequent analyses.

Data collection involved two primary instruments: the OPT and a detailed motivation questionnaire. While the OPT provided a baseline measure of English language proficiency and was used for supplementary purposes only, the core of our analysis focused on the motivation questionnaire. This questionnaire, administered once during the study period, contained items designed to assess various aspects of L2 motivation, which will be further explained in the subsequent section.

Data Collection
In our study, two main instruments were used:

OPT with sociodemographic questions
The initial questionnaire that participants completed was an OPT, a standardized EFL assessment, which incorporated a series of sociodemographic inquiries (see Table 1). Notably, one of these questions probed whether participants engaged in additional English lessons beyond the official curriculum. This question assumed a pivotal role in our study, as it enabled us to discern the tendencies within each cohort – those attending supplementary English lessons and those who did not. We did not include the remaining questions in our study (e.g. interest in learning an L2 or the OPT result) as they fell outside the scope of its objectives.

Table 1

Sociodemographic Questions and the OPT

Item	Type of question
What is your interest in learning a second language?	Likert-based scale (1-5) Very low - low - normal - high - very high
How many years have you been studying English?	1-3, 3-5, 5-7, 7-10, more than 10 years
Do you take additional English classes beyond the official ones (if you attend a school, university, etc.)?	Yes (1), no (0).
OPT - English assessment questions	Multiple-choice questions

L2MSS questionnaire
The questionnaire implemented in this study was developed based on seminal theories in L2 motivation research. It integrates the framework of Dörnyei (2009), and adapts Taguchi et al.'s (2009) modifications, following similar studies in this scholarly domain (see Ramirez, 2022). The structure of the questionnaire assesses key dimensions of the L2 motivational self system, specifically the Ideal L2 Self, Ought-to L2 Self, and L2 Learning Experience (see Table 2). It contains targeted questions designed to explore learners' aspirations, societal expectations, and practical experiences in their English language learning, thereby offering insights into their motivational dynamics.

Table 2

Dimensions of the Adapted L2MSS Scale and the Corresponding Questions

Dimension	Type of question
Ideal L2 self	M_1: Aspiration to travel abroad.
	M_3: Enhancing job prospects.
	M_5: Residing and speaking fluently abroad.
	M_8: English as a prerequisite for promotions.
	M_12: Seeing oneself proficient in English.
	M_16: My pursuit of English studies is underscored by the anticipated benefits it will offer during my overseas travels.
	M_20: Envisioning fluency akin to a native speaker.
	M_24: Frequent English conversations internationally.
	M_28: English proficiency integral to future profession.
	M_29: Enjoying travel and exploration through English.
	M_30: Contributing to societal respectability through English studies.
Ought-to L2 self	M_4: Influence from friends.
	M_6: Avoiding subpar academic performance.
	M_7: Wishing for cultural similarities to Spanish culture.
	M_9: Family endorsement.
	M_10: Alignment with respected perspectives.
	M_15: Expectations from immediate surroundings.
	M_21: Gaining favor with parents and relatives.
	M_22: Avoiding failure in coursework.
	M_26: Avoiding shame associated with poor grades.
L2 Learning Experience	M_2: Effort to learn English effectively.
	M_11: Desire to allocate more time to learning English.
	M_13: Necessity for future academic endeavors.
	M_14: Influence of English on the Spanish language.
	M_17: Readiness to exert effort in mastering English.
	M_18: Belief in cultural benefits from one's own culture.
	M_19: Avoiding unfavorable academic outcomes.
	M_23: Perception of the challenge compared to peers.
	M_25: Expectation of educated individuals to know English.
	M_27: Willingness to continue learning English.
	M_31: Link between English command and higher social regard.

The reliability of the questionnaire was evaluated using the Bayesian version of Guttman's Lambda-6 ($\lambda6 = .94$), indicating excellent reliability. This confirms the robustness of the questionnaire for evaluating the underlying constructs of L2 motivational self systems. Given its previous applications in L2 research, verifying its internal validity was essential, further substantiating its utility for scholarly investigations.

Statistical Analyses

In this study, Bayesian Network Analysis was employed to explore the complex relationships and dependencies among motivational constructs within the L2MESS framework, focusing on the differences between students who participate in additional EFL lessons and those who do not. This method is particularly effective for modeling complex interactions between multiple variables, which is crucial for understanding how different motivational components (ideal L2 self, ought-to L2 self, and L2 learning experience) affect language learning behaviors and outcomes.

The Bayesian Network model was developed using data collected from a detailed motivational questionnaire and the sociodemographic questions incorporated into the OPT. This model allowed us to deduce the probabilistic relationships and causal connections between

the observed variables, offering insights into how specific motivational aspects affect language learning across various educational contexts. Moreover, the structure of the network facilitated a visual representation of these relationships, simplifying the interpretation of how different motivational components influence each other across various groups of learners.

Results

In order to observe the macro-relationships between the different dimensions of the L2MSS questionnaire, we carried out an initial Bayesian network analysis between these dimensions, as can be seen in Figure 1. In this regard, the objective was to examine the dependency structures between language learning variables under two conditions: not attending additional L2 lessons (Condition 0) and attending additional EFL lessons (Condition 1). Both networks exhibited a full set of connections (6 edges each), with Condition 1 showing a slight reduction in active edges (5 out of 6). Network sparsity was zero in Condition 0, indicating a fully connected network, whereas it was 0.167 in Condition 1, reflecting minor reductions in connectivity. In Condition 0, substantial weights were noted between Total Motivation and other nodes, with the highest weight to Ideal L2 Self (0.845) and the lowest to L2 Learning Experience (0.740). All these connections showed high probability evidence, all equal to or nearly 1.000, suggesting strong support for these edges.

Conversely, in Condition 1, the analysis revealed similarly high weights, with notable weights from Total Motivation to Ideal L2 Self (0.763) and to Ought-to L2 Self (0.746). The probabilities of these connections remained consistently high, indicating robust evidence for the existence of these relationships in the context of additional EFL lessons. The weights from Ideal L2 Self and Ought-to L2 Self to other nodes indicated some negative influences (e.g., -0.754 from Ideal L2 Self to Ought-to L2 Self in Condition 0), with probabilities supporting these inverse relationships.

While both conditions display strong connections from Total Motivation to other variables, the specific weights vary. For example, the connection from Total Motivation to Ideal L2 Self is slightly stronger in Condition 0 (0.845) compared to Condition 1 (0.763). Similarly, the weights involving negative influences from Ideal L2 Self and Ought-to L2 Self to other variables exhibit noticeable shifts, particularly in their impact on L2 Learning Experience. Although most connections maintain high probability values, indicating robust statistical support, the subtle shifts in weight magnitudes under different educational settings (with or without additional lessons) suggest varying degrees of influence among the variables.

The Bayesian network model effectively illustrates the relationships between various motivational constructs for learning English and attending additional lessons outside of regular university classes. The network consists of 31 nodes representing different motivational constructs derived from questionnaire items. The analysis revealed that the network is sparse, with only about 18% of the potential connections being utilized—84 and 85 non-zero edges out of a possible 465, for sparsity scores of 0.819 and 0.817, respectively.

Figure 1
Network Path for both Conditions (Categorized According to the L2MSS)
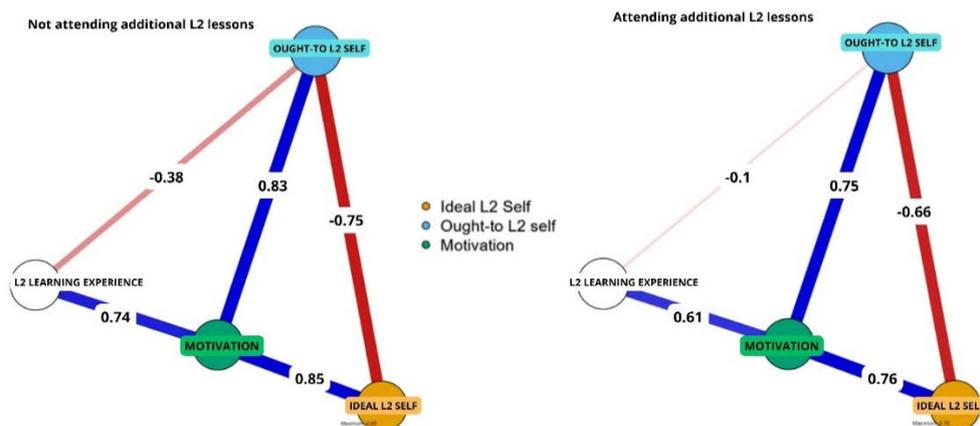
The network model segregates into two distinct groups corresponding to whether students attend extra English lessons or solely rely on formal classes. This segregation indicates specific patterns of motivational influences associated with additional learning activities compared to standard classroom education (see Figure 2).

Figure 2
Network path for both Conditions (Categorized According to the L2MSS)
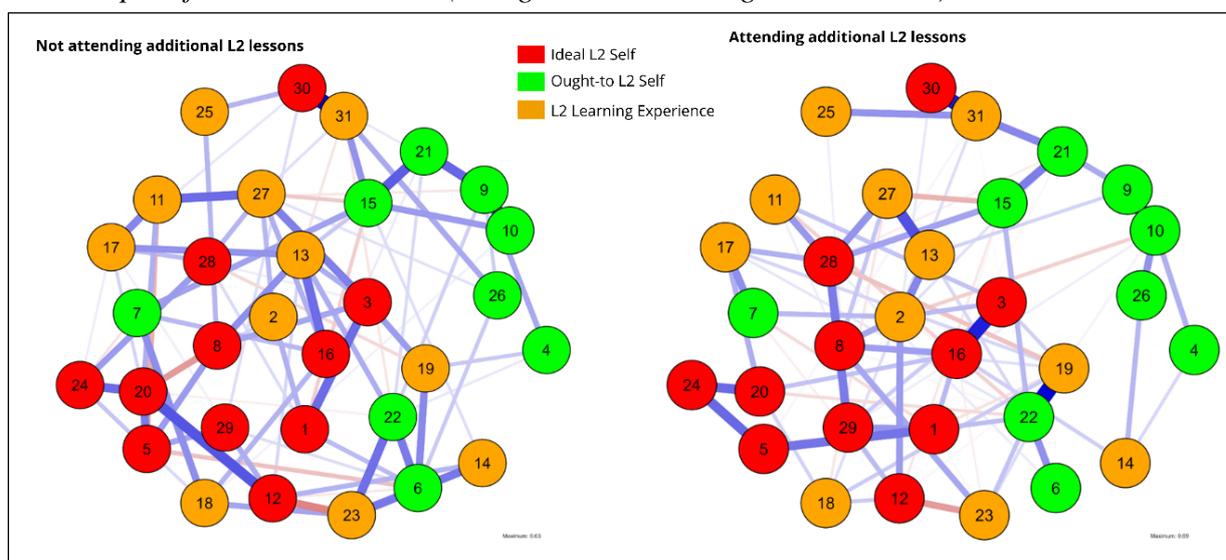
For students not enrolled in extra EFL sessions, key connections between their personal aspirations and practical learning efforts were evident. Specifically, aspirations to travel abroad (M_1) demonstrated a robust link to efforts to learn English effectively (M_2) (weight = 0.191, probability = 1.000). In addition, enhancing job prospects (M_3) was closely connected to the role of English in securing promotions (M_8) (weight = 0.220, probability = 1.000). Other significant connections included the relationship between avoiding subpar academic performance (M_6) and avoiding failure in coursework (M_22) (weight = 0.325, probability =

1.000), indicating a strong interaction between these elements of the L2 Learning Experience outside formal educational settings.

In contrast, students attending additional EFL lessons exhibited stronger and more intricate connections. The link between personal aspirations like traveling abroad (M_1) and the desire to reside and speak fluently abroad (M_5) was notably robust (weight = 0.375, probability = 1.000), demonstrating how formal learning environments amplify key motivational aspects of the Ideal L2 Self. The strongest connection observed was between enhancing job prospects (M_3) and the necessity for future academic endeavors (M_13) (weight = 0.601, probability = 1.000), underscoring the significant impact of structured lessons on reinforcing practical outcomes of language learning. Additionally, the connection between family endorsement (M_9) and alignment with respected perspectives (M_10) in a formal learning setting (weight = 0.569, probability = 1.000) highlighted how formal education enhances the integration of socially driven motivations.

Figure 3 presents the centrality plot, which depicts the centrality measures calculated to evaluate the influence and prominence of each variable within the Bayesian networks. For students not attending extra EFL lessons, several variables indicated significant centrality measures. More specifically, M_15 (Expectations from immediate surroundings) exhibited the highest betweenness centrality (3.057), pointing to its crucial role as a mediator among network connections. Additionally, M_13 (Necessity for future academic endeavors), with the highest closeness centrality (1.943), suggests its central connectivity to all other nodes, facilitating quicker interactions. The strength measure was highest for M_20 (Envisioning fluency akin to a native speaker) at 2.003, indicating robust direct connections. M_13 also showed the highest expected influence (2.320), reflecting its substantial potential to impact other nodes within this educational context.

In contrast, for students attending additional EFL lessons, different patterns emerged. M_28 (English proficiency integral to future profession) exhibited a betweenness centrality of 1.958, emphasizing its critical function at a juncture within the network. M_27 (Willingness to continue learning English) recorded the highest closeness centrality (1.903), highlighting its ease of accessibility to all other network nodes. Furthermore, M_22 (Avoiding failure in coursework) not only showed the greatest strength (2.551) but also the highest expected influence (2.100) under formal education settings, underscoring its strong ties and substantial influence on the learning dynamics.

Figure 3

Centrality Plot
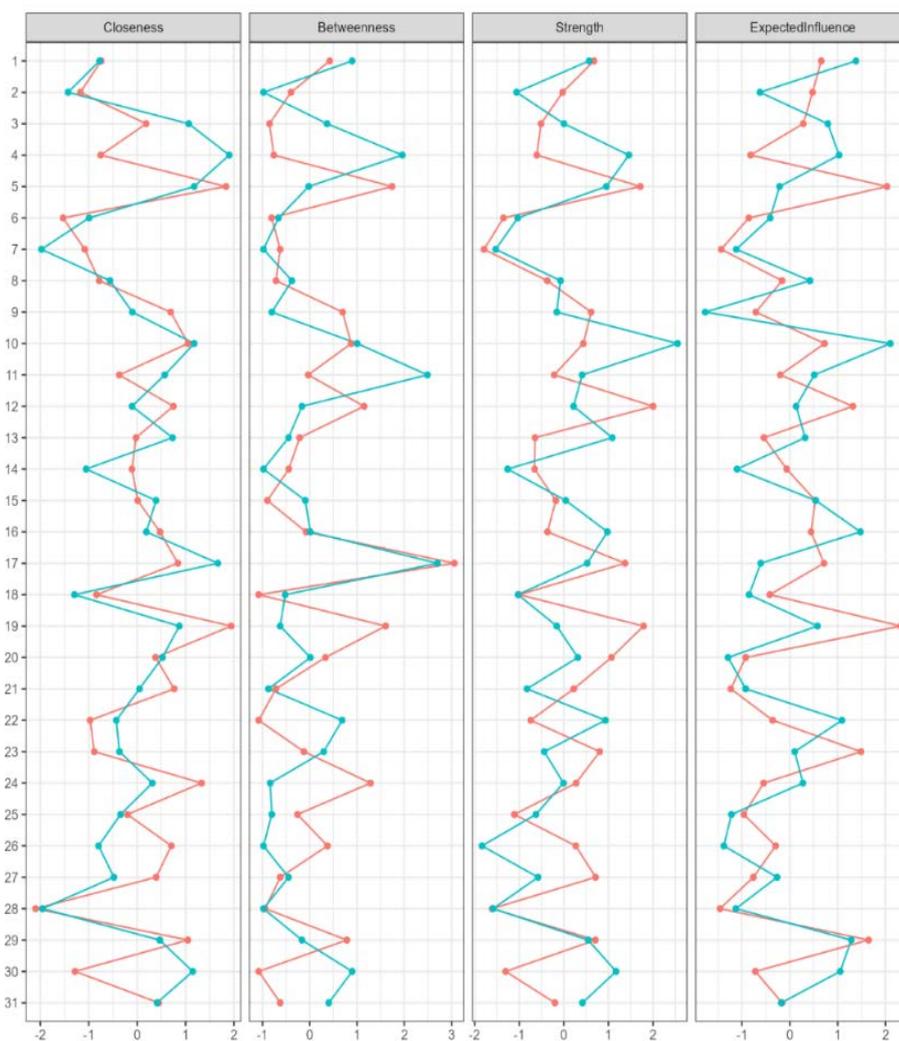
The red line corresponds to 'not attending additional EFL lessons' and the blue line corresponds to 'attending additional EFL lessons'.

Discussion

This study aimed to investigate the differential impacts of additional EFL lessons on motivational constructs within the L2MSS framework. While our findings reveal significant differences in the network structures of both groups (attending vs not attending additional EFL lessons), these results must be interpreted cautiously. Along this line, the Bayesian network analysis revealed significant contrasts in the connectivity among motivational constructs for the students who attended extra English lessons and those who solely depended on formal classroom settings. Students engaged in additional L2 lessons exhibited a more integrated motivational network with robust connections between nodes representing personal aspirations and practical language learning outcomes. This is seemingly aligned with Ushioda and Dörnyei's (2012) assertion of the context-sensitive nature of L2 motivation. For example, the strong link between the aspiration to travel abroad (M_1) and the desire to reside and speak fluently abroad (M_5) demonstrated a weight of 0.375 with a probability of 1.000, indicating a very strong connection that aligns with the idea of an enhanced Ideal L2 Self (Magid & Chan,

2012). This suggests that students who participate in additional lessons might be motivated by a well-defined vision of using the language in meaningful contexts, which could support deeper language engagement and proficiency. Nevertheless, this observation prompt us to critically examine whether the L2MSS framework adequatly accounts for the role of educational privilege in shaping these motivational structures. The higher connectivity observed in this group supports Lee et al.'s (2018) findings on the positive impact of motivational strategies extending beyond the classroom setting, but it also raises concerns about the accessibility of such strategies to all learners. This aspect falls out of the scope of our study, but it certainly merits further examination.

Conversely, students relying on formal classroom instruction showed a sparser network with less connectivity, as evidenced by a network sparsity score of 0.167 in condition 1 (students attending extra lessons) compared to a fully connected network in condition 0 (students not attending extra lessons). While this difference in network density echoes Dörnyei's (2009) conceptualization of the L2MSS as a dynamic system influenced by contextual factors, it equally exposes potential shortcomings in formal educational settings. The observed disparity coincides with Lin's (2022) emphasis on the importance of out-of-class L2 contact. Yet, it similarly points to the critical need to address why formal classroom environments may be failing to foster similarly integrated motivational networks. Hence the fact that motivation in this group appeared more influenced by immediate academic needs rather than future-oriented aspirations. Their motivational profiles were characterized by weaker weights and probabilities connecting aspirations to practical outcomes, such as a weight of 0.191 between the aspiration to travel abroad (M_1) and efforts to learn English effectively (M_2). This finding suggests that their motivation may be more extrinsically driven, which has been shown to be less effective in sustaining long-term engagement and proficiency in language learning compared to intrinsic motivation (Noels et al., 2000).

Another important finding is that students attending extra L2 lessons demonstrated stronger connections related to the Ideal L2 Self compontent. While this is aligned with Magid and Chan's (2012) findings on the motivational power of vivid future self-images, we must critically examine whether these enhanced self-images are truly a result of additional L2 lessons or if they reflect pre-existing motivational advantages. Such a finding was equally suggested by Moskovsky et al. (2016) as being a conflating cause and effect, potentially overlooking the role of socioeconomic factors in both seeking extra L2 instruction and developing robust future L2 self-images. The stronger Ideal L2 self connections in the additional L2 lessons resonate with Li et al.'s (2022) study on intensive English courses. However, this finding raises critical questions about the equity of acess to such motivationally enriching experiences. If additional L2 lessons is indeed key to developing stronger ideal L2 selves, we must confront the implications for learners who may lack the resources or opportunities to engage in such lessons. This, in turn, may potentially perpetuate or exacerbate existing educational inequalities.

Another relevant finding is the manifestation of the ought-to L2 self, which was different between the two groups, with the formal classroom-only students showing stronger connections to extrinsic motivational factors. Such association exposes potential flaws in formal educational approaches (Noels et al., 2000). The prevalence of extrinsic motivation in this group is further supported by previous studies, such as Papi and Khajavy's (2021) findings

on the prevention-focused nature of the Ought-to L2 self, which indicate that formal classroom settings may be overemphasizing external pressures at the expense of fostering intrinsic motivation.

The difference between groups in terms of Ought-to L2 self makes it evident that social and external pressures in L2 motivation are complex aspects (Darvin & Norton, 2023). This complexity equally highlights a potential limitation of the L2MSS framework in fully capturing the sociocultural dynamics that shape motivation. A stronger extrinsic motivation in the formal-only classroom group may indicate systemic issues in how language education is structured and valued within broader educational and social contexts.

Another finding reported in our study is the stark contrasts in the L2 Learning Experience component between groups, which not only align with Darvin and Norton's (2017) concept of investment in L2 learning but also expose a critical shortcoming in how formal educational settings fail to create engaging and personally relevant learning experiences that resonate with learners' future goals, as indicated by Saito et al. (2018). The additional L2 lessons group, which experienced enhanced L2 learning supporting Wei's (2023) findings on personalized learning experiences, reveals the limitations of the one-size-fits-all approaches prevalent in many formal classroom settings. The apparent superiority of additional L2 lessons in fostering positive L2 learning experiences raises ethical concerns about the stratification of educational quality and its potential to reinforce socioeconomic disparities. This situation prompts us to question why formal educational structures may often fail to provide motivating environments and how this failure may systematically disadvantage certain groups of learners.

Our findings require a critical reexamination of the L2MSS framework, particularly in its ability to account for diverse learning contexts and socioeconomic factors. Such reexamination has been put under scrutiny at present (see Al-Hoorie et al., 2024) as the ability to capture the multidimensionality of motivation in all situations is questionable. The observed differences in motivational structures in our study suggest that the model may be oversimplifying the complex, context-dependent nature of L2 motivation. While Norton and Morgan's (2020) emphasis on the socially constructed nature of L2 motivation support our findings, there is a need for more solid theoretical frameworks that can capture these sociocultural dynamics within motivation more effectively. Similarly, the differential impact of additional L2 lessons on motivational structures points to a potential blind spot in current L2 motivation theory regarding the role of educational access and privilege, as mentioned previously within this section. Previous research on resilience and motivated behavior have demonstrated the connection of these two variables (Kim & Kim, 2020), but our results prompt us to critically examine whether resilience is truly an individual trait or a luxury afforded by advantageous learning environment. This may suggest that L2 motivation models need to more explicitly incorporate socioeconomic factors and educational equity considerations.

Finally, the differences between the two groups accentuate Sulis's (2020) perspective about the non-linear and dynamic relationship between motivation and engagement in L2 learning. However, such complex reality exposes the limitations of current theoretical approaches in capturing the full spectrum of factors influencing L2 motivation. These shortcomings certainly need to be addressed in the future.

Implications for Teaching

These distinctions in motivational network structures between the two student groups underline how relevant it is for teachers to understand the specific motivational dynamics at play within different learning environments. The recognition of these differences facilitates the teachers' task to better customize their instructional strategies in an attempt to address the immediate learning needs but also to cultivate a more intrinsic and future-oriented motivational profile, which is crucial for sustained language acquisition and success (Ryan & Deci, 2000). Certainly, there are several strategies which may contribute to increasing effectiveness and motivation in L2 learning. First, teachers should help students align their learning goals with their Ideal L2 selves through goal-setting activities. These help students define their personal and professional goals in the L2 while making the learning process more relevant and closely connected to their future prospects. According to Dörnyei (2009), a clearly defined Ideal L2 self can greatly enhance motivation and success in L2 learning. Thus, practical methods in the EFL classroom may include the implementation of vision boards, writing about their future selves, or holding sessions where students discuss, through the L2, how their current studies align with their long-term goals. Second, the introduction of translanguaging practices can make the learning environment more inclusive and supportive. Translanguaging involves using students' first language strategically to support L2 acquisition, which further improves understanding and confidence while preserving cultural identity. Such a teaching approach is particularly beneficial in formal classroom settings where students may feel less confident. In this respect, Liu (2024) indicates that using a first language carefully may enhance the learning outcomes in an L2 and, as a result, increase student engagement in an attempt to close the motivational gap between additional and regular L2 lessons. Third, resilience should equally occupy a relevant role in the L2 classroom environment, especially for students lacking access to additional L2 instruction. Activities designed to build resilience, such as collaborative problem-solving challenges or peer-supported learning projects, can assist students in overcoming setbacks in a supportive context. Hence, these strategies hold a pivotal role in maintaining high levels of motivation and dedication given the link between resilience and motivated behavior (Kim & Kim, 2020). Finally, teachers should attempt to create scenarios within formal classroom settings that mimic real-world language use. Such scenarios may help to strengthen the connections between immediate L2 learning experiences and future goals, particularly for those students dependent solely on formal instruction.

Conclusion

The aim of this study was to investigate how motivational constructs interact differently for students who attend additional EFL lessons versus those who do not. The findings revealed two distinct motivational profiles: (i) Students attending supplemental EFL lessons exhibited a highly integrated and future-oriented motivational network. Personal aspirations like desires to travel or work abroad were robustly linked to pragmatic outcomes such as enhancing job prospects and academic performance. This coherent structure suggests additional language instruction cultivates an ideal L2 self-concept that fuels engagement with practical learning efforts. Highly central variables included "English proficiency integral to future profession" and "Willingness to continue learning English."; (ii) Students relying solely on formal instruction displayed a sparser motivational network dominated by extrinsic influences like

avoiding subpar academic outcomes or aligning with social expectations. Connections between personal aspirations and language learning behaviors were weaker. Central nodes reflected more immediate external pressures like "Expectations from surroundings" rather than self-guided motivations.

This study, while revealing in its findings, faces several limitations that must be acknowledged to fully appreciate the context and scope of the results. First, the sample size of 118 university students, while adequate for initial explorations, may be insufficient. This limitation restricts the statistical power of our analyses and may limit the generalizability of our findings to broader L2 learner populations. Research involving larger samples would help validate the robustness of the Bayesian network model and the universality of the motivational profiles observed (Dörnyei, 2007).

Additionally, the study's participants were limited to university students in Spain, which introduces a contextual bias that may not accurately reflect the motivational dynamics of students in other educational settings or cultural backgrounds. The specific socio-cultural and educational context of Spain, with its unique language learning environment and policies, might influence L2 motivation differently compared to contexts in other countries (Ushioda, 2010). Therefore, future studies should consider replicating this research in varied geographical and educational contexts to explore the consistency of these motivational patterns.

Another limitation involves the instrumentation used in this study. The motivational constructs were measured using a self-report questionnaire based on existing scales, which might not capture the full complexity of motivation or reflect the latest advancements in L2 motivation research. There is a potential for response biases and misinterpretations of the questions by the participants, which could affect the accuracy of the data (Dörnyei & Taguchi, 2010). Future research could benefit from incorporating more dynamic and interactive measures, perhaps integrating qualitative methods such as interviews or observational data to gain deeper insights into the motivational processes of learners.

Furthermore, the cross-sectional design of this study limits our ability to draw causal inferences or track changes in motivation over time. Motivation is a dynamic construct that evolves with learners' experiences and proficiency levels. A longitudinal approach would allow researchers to observe how motivation develops and fluctuates in response to different instructional interventions or life events (Wang et al., 2021).

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Competing Interests
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