

Investigating The Interactions Between L2 Motivational Self-guides, and Type of L2 Forms with Moderating Role of Type of L2 Knowledge

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ABSTRACT

Individual differences, particularly motivation, play a central role in English as a Foreign Language (EFL) development, yet how motivational self-guides interact with different types of linguistic knowledge across form difficulty remains insufficiently explored. Addressing this gap, the present study investigated the relationships among L2 form difficulty (easy vs. difficult), motivational components of the Second Language Motivational Self System (L2MSS), and types of L2 knowledge (explicit vs. implicit) using a quasi-experimental design. A total of 259 Iranian ESP (English for specific purpose) university students (aged 18–25) received explicit, deductive instruction on easy and difficult L2 forms and completed measures of explicit and implicit knowledge as well as a four-factor L2MSS questionnaire. Form difficulty was operationalized following Roehr and Gánem-Gutiérrez's (2009) taxonomy, and motivation was conceptualized using Papi et al.'s (2019) model distinguishing self-guides oriented toward oneself versus others. Structural equation modeling examined direct, indirect, and total effects among motivational components and L2 knowledge types across form difficulty. Results indicated that self-oriented ideal and ought-to L2 selves were significant positive predictors of both explicit and implicit knowledge for easy and difficult forms. Explicit knowledge also emerged as a robust predictor of implicit knowledge across form types. These findings highlight the pivotal role of motivational self-guides and the mediating function of explicit knowledge in L2 development, with implications for the design of form-focused instruction.

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Introduction

Second language (L2) acquisition is a complex process shaped by the interplay of linguistic variables, instructional contexts, and individual differences (IDs). Among these, the inherent difficulty of L2 forms is a central challenge, as it influences both learning trajectories and the nature of the knowledge learners acquire. Foundational frameworks, such as those proposed by DeKeyser (2003, 2005), offer valuable distinctions between objective and subjective difficulty based on features like formal complexity and form-meaning relationships. However, these models are insufficient as they often treat form difficulty as an objective linguistic property, largely

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omitting the crucial role of learners' internal psycholinguistic factors, such as motivation, which mediate how difficulty is experienced and overcome.

This picture is further complicated by the distinction between implicit (unconscious, automatized) and explicit (conscious, rule-based) knowledge. While theorists like Ellis (2006) posit a logical connection—suggesting that more difficult forms may encourage explicit learning while easier forms support implicit acquisition—a significant gap exists in the empirical literature. There is limited research systematically testing how form difficulty actually shapes the balance between implicit and explicit knowledge development, particularly when learner IDs are considered. The ID variable of motivation, for instance, plays a pivotal role in shaping learners' ability to cope with the challenges inherent in EFL learning. Learning a new language inevitably involves engaging with complex L2 forms, including intricate grammatical structures and unfamiliar linguistic patterns. Such complexity can impose substantial cognitive and affective demands on learners, making sustained motivation essential for perseverance and successful language development (Ghafournia & Malekshahi, 2025). Empirical evidence supports this view; for example, Zarfsaz and Hosseini (2023) reported that the fulfillment of learners' competence needs exerted a significant positive influence on the motivation of Iranian EFL students. Specifically, learners who were able to comprehend and accurately use a range of L2 forms demonstrated higher levels of motivation. Motivation is therefore recognized as a central ID variable driving L2 development (Dörnyei et al., 2015; Roberts & Meyer, 2012). Nevertheless, its precise role in the learning process remains insufficiently understood. In particular, it is still unclear whether high levels of motivation facilitate the development of implicit knowledge even for linguistically demanding forms, or whether motivation primarily supports the learning of explicit, rule-based knowledge.

Crucially, the nexus of these three domains; (1) L2 form difficulty, (2) the type of knowledge produced (implicit vs. explicit), and (3) learner motivation—remains a largely unexplored and insufficiently integrated area of L2 research. Previous studies have typically examined these factors in isolation, failing to capture the dynamic interactions that define real-world language learning. To address this critical gap, the present study investigated the interrelationships among these three variables. By drawing on Ellis's (2006) model of form difficulty and Papi et al.'s (2019) contemporary four-factor model of the Second Language Motivational Self-System (L2MSS), this research sought to elucidate how specific motivational profiles interacted with the difficulty of linguistic forms to shape the development of both implicit and explicit L2 knowledge.

Literature Review

Implicit vs. Explicit Knowledge: Challenges and Difficulties

A central challenge in second language acquisition lies at the interface of explicit and implicit knowledge. While explicit knowledge can be defined as conscious, declarative awareness of linguistic rules (Paradis, 2004), and implicit knowledge as the automatized, intuitive system used in fluent communication, the relationship between them is far from settled. One influential perspective suggests that explicit knowledge can be converted into implicit knowledge through extensive practice (DeKeyser, 2020). However, this linear "explicit-to-implicit" model is complicated by evidence that L2 grammar can be acquired effectively without focused attention on form, suggesting a direct route to implicit knowledge is also possible (Kang et al., 2019). This

creates a significant theoretical and pedagogical problem on which learning pathway is dominant, and under what conditions it should be taken place.

This problem is magnified when considering the inherent difficulty of L2 forms. The ease or difficulty of a grammatical item appears to be fundamentally tied to the type of knowledge it requires. For linguistically simple forms—those with high frequency, saliency, and clear functional value (Ellis, 2006)—learners may readily develop implicit knowledge through mere exposure. In contrast, more complex forms, which lack these features, may resist implicit acquisition and necessitate the development of explicit, declarative knowledge as a necessary scaffold for learning. This distinction creates a critical tension: the boundary between the two knowledge systems is not a simple dichotomy but is instead nuanced and highly dependent on the nature of the linguistic feature being learned (Godfroid & Coss, 2025).

This unresolved tension directly impacts pedagogy, fueling contentious debates over the necessity of direct grammar instruction (Sato & Oyanedel, 2019). The core of the problem is a lack of clarity on how form complexity systematically mediates the relationship between explicit and implicit knowledge. The question is whether difficult forms require an explicit pathway to become implicit, or if learners can develop implicit knowledge of complex structures under the right conditions. Answering these questions is essential for designing effective instruction. Therefore, the present study was an attempt to address these gaps by investigating how the variable of form difficulty (easy vs. difficult) interacted with the development of both explicit and implicit knowledge within a form-focused instructional context.

Determinants of Objective and Subjective Difficulty

As stated earlier, objective complexity of L2 forms specifies the learners' access to input characteristics and consists of its perceptual saliency (e.g., the morphological feature of -ing is more salient and, thus, simpler to learn than third person -s), occurrence frequency (e.g., plural -s appears more frequently comparing to the genitive -s, for example), communicative relevance (plural -s bears more semantic/communicative value comparing to indefinite article), and the structural difficulty.

Subjective complexity of L2 forms relates to learners' motivation, L1-L2 overlap, age, L2 proficiency, etc. The present paper is concerned with the determinants of objective difficulty (i.e., saliency, frequency, communicative relevance, etc.) and one important determinant of subjective difficulty (i.e., motivation within L2MSS model proposed by Dörnyei, 2005). The L2MSS theorizes that the learners' behavior would be affected by three variables: ideal L2 self, which deals with a "future- oriented vision of what a learner might like to be; ought-to L2 self, which refers to the attributes that one believes he ought to possess to meet expectations and to avoid possible negative outcomes" (Dörnyei & Ushioda, 2009, p. 29); and L2 learning experience (L2LE), which relates to learners' attitudes toward instructional environment (Dörnyei & Ushioda, 2011).

A revised version of the L2MSS, known as the 2×2 model of self-guides, was proposed by Papi et al. (2019) drawing on self-discrepancy theory (Higgins, 1987) and regulatory focus theory (Higgins, 1997). By differentiating ideal and ought-to L2 selves according to *own* versus *other* standpoints, this model moves beyond a unitary conceptualization of L2 motivation and offers a more fine-grained account of how learners regulate their engagement with language learning. The resulting four self-guides—ideal L2 self_{own}, ideal L2 self_{other}, ought-to L2 self_{own}, and ought-to L2 self_{other}—represent distinct motivational orientations that are likely to shape

learners' perceptions of difficulty and their reliance on different learning processes. Specifically, the ideal L2 self_{own} reflects an internally generated vision of oneself as a competent L2 user and is typically associated with promotion-focused regulation, sustained engagement, and openness to challenge. Such conditions are conducive to deeper processing and implicit learning, particularly in communicative and meaning-focused tasks. In contrast, the ought-to L2 selves, especially those grounded in others' expectations, are more closely aligned with prevention-focused regulation, where the primary concern is avoiding negative outcomes or social disapproval. This orientation may heighten learners' sensitivity to difficulty and encourage more cautious, controlled behavior, thereby favoring explicit learning strategies and rule-based processing. From this perspective, the 2 × 2 model provides an explanatory framework for understanding variability in how learners experience task difficulty and how motivational self-guides interact with implicit and explicit dimensions of L2 learning.

Determining factors to Implicit and Explicit Learning Difficulty

Drawing on Ellis (2006) and DeKeyser (2005), Roehr and Ganem-Gutierrez (2009) represented the below-mentioned determinants of difficulty in respect to implicit and explicit knowledge:

Table 1

Classification of criteria contributing to learning difficulty in terms of implicit and explicit adopted from Roehr and Ganem-Gutierrez (2009)

Variables	Definitions	Learning Difficulty
1. Frequency	The frequency with which an L2 form occurs in the input.	High frequency decreases implicit learning difficulty.
2. Perceptual Saliency	The ease with which an L2 form can be perceived auditorily in spoken input.	High perceptual salience decreases implicit learning difficulty.
3. Communicative Redundancy	The extent to which an L2 form contributes to the communicative function of a message.	High communicative redundancy increases implicit learning difficulty.
4. Opacity (one form, multiple meanings)	The extent to which an L2 form connects to one/more meanings.	High opacity increases implicit learning difficulty.
5. Opacity (one meaning, multiple forms)	The extent to which an L2 meaning connects to a single or multiple forms.	High opacity increases implicit learning difficulty
6. Schematicity	The extent to which an L2 form is schematic/specific.	High degree of schematicity can reduce learning difficulty in terms of explicit/implicit knowledge.
7. Complexity due to concept	Components have to be considered in a metalinguistic description.	Such complexity can enhance difficulty in terms of explicit knowledge.

8. Metalanguage Technicality	The metalanguage ambiguity and familiarity used in a metalinguistic description.	High technicality of metalanguage can increase difficulty in terms of explicit knowledge.
9. Truth Value	To what extent a metalinguistic description applies without exception.	Such value can reduce difficulty in terms of explicit knowledge.

As displayed in Table 1, the nine variables represent distinct sources of L2 learning difficulty that are systematically related to implicit and explicit learning processes. The first five variables (frequency, perceptual saliency, communicative redundancy, and the two types of opacity) capture properties of input and form–meaning mappings, and therefore primarily affect difficulty in implicit learning, where acquisition depends on repeated exposure, perceptual availability, and transparent mappings. In the present study, these variables provide a principled basis for operationalizing *implicit learning difficulty* by identifying conditions under which learners are more or less likely to internalize L2 forms without conscious rule application. Schematicity occupies a transitional position, as it reflects both formal properties of linguistic constructions and the degree of abstraction involved in their description; consequently, it is relevant to both implicit pattern learning and explicit rule formation. The final three variables—conceptual complexity, metalanguage technicality, and truth value—are directly tied to the nature of metalinguistic explanations and thus primarily influence *explicit learning difficulty*, where conscious analysis, rule verbalization, and exception handling are required. In this study, these variables are used to explain differential learner performance and strategy use under implicit versus explicit learning conditions, allowing difficulty to be interpreted not as a uniform construct but as one that interacts with the type of knowledge targeted and the instructional demands imposed.

Review Findings: Empirical Backgrounds

Several studies have examined learning complexity by focusing on the differential acquisition of grammatical morphemes. Yeni-Komshian et al. (2000) reported that learners' achievement was significantly weaker for plural –s than for third-person singular –s, attributing this disparity to differences in noun phrase (NP) and verb phrase (VP) structures and to the greater perceptual salience of VP-related morphology in Korean L1. Similarly, Goldschneider and DeKeyser (2008), in their investigation of morpheme acquisition order, demonstrated that salience—conceptualized as a composite of phonological salience, morphological regularity, semantic complexity, and frequency—accounted for a substantial proportion of variation in L2 acquisition. Taken together, these studies converge on the view that learning complexity cannot be attributed to a single factor but rather emerges from the interaction of multiple input-related and representational features. At the same time, both studies highlight an unresolved issue: because features such as salience, frequency, and structural complexity are tightly intertwined, it remains difficult to disentangle their individual contributions or to determine how learners respond to them under different learning conditions. This gap underscored the need for research that examined how specific sources of complexity operated across implicit and explicit learning contexts, which the present study sought to address.

Additionally, DeKeyser et al. (2010) examined the role of saliency in the acquisition of Hebrew morphology and demonstrated that saliency was a strong predictor of learning difficulty. They further reported a significant relationship between age and saliency, suggesting that the impact of saliency becomes more pronounced as learners grow older. Extending this line of

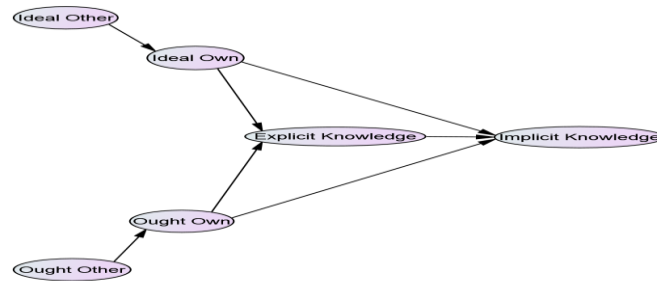
research, DeKeyser et al. (2017) showed that difficulty was shaped not by saliency as a unitary construct but by the combined influence of its components, such as phonological salience and homonymy with other morphemes. Taken together, these studies underscore the central role of saliency—and its subcomponents—in shaping L2 learning difficulty across learner populations. However, they also leave open an important question: while saliency has been shown to predict difficulty and to interact with learner age, it remains unclear how its effects differ across learning conditions that rely more heavily on implicit versus explicit knowledge. The present study attempted to address this gap by examining how saliency-related sources of difficulty operated under different learning types, thereby offering a more fine-grained account of when and how saliency constrained L2 development.

The Present Study

Building on the literature reviewed above, which highlights the interaction between L2 learning difficulty, motivational self-guides, and implicit versus explicit knowledge, the present study examined how these factors were structurally related within a single analytical framework. Specifically, the study investigated the associations between type of L2 forms, individual difference factors as conceptualized in the revised 2×2 L2MSS model, and learners' implicit and explicit L2 knowledge. The focus was on the contribution of the newly bifurcated self-guides to different types of L2 knowledge across two forms that differ in learning difficulty. To this end, two structural equation models (SEMs) were specified. The first model represents the directional relationships between the four L2 self-guides and learners' implicit and explicit knowledge of verb complements, operationalized as the easier L2 form, among Iranian EFL learners. The second model represents the corresponding relationships for unreal conditionals, operationalized as the more difficult L2 form, within the same learner population. As illustrated in the model, other-based self-guides (ideal L2 self_{other} and ought-to L2 self_{other}) are specified as being directly associated with their corresponding self-based guides (ideal L2 self_{own} and ought-to L2 self_{own}), reflecting the internalization of external expectations into learners' self-concepts. Both self-based guides are then specified as directly associated with explicit L2 knowledge, given their relevance to conscious goal orientation, rule awareness, and effortful learning processes. Explicit knowledge is, in turn, specified as being directionally associated with implicit knowledge, reflecting the theoretical assumption that consciously accessible representations may support the development of more automatized language use. In addition, direct paths from self-based guides to implicit knowledge are included to account for the possibility that motivational orientations may also be linked to implicit knowledge independently of explicit learning. This set of directional associations constitutes the hypothesized structural configuration tested in the present study and is depicted in Figure 1.

Figure 1

The presumed model of four-factor L2MSS



The bifurcated L2 self-guides (i.e., ideal L2 self_{own/other}, ought to L2 self_{own/other}) were taken into account with respect to explicit/implicit knowledge. The ‘other’ facets of the L2 self-guides were considered to be less-internalized constructs than the ‘own’ facets (Teimouri, 2017), so it seemed plausible for the ideal L2 self_{other} to be one of the antecedents of the ideal L2 self_{own} and also the ought to L2 self_{other} to be one the predictors of ought to L2 self_{own}. Accordingly, the structural model specified directional paths from the ‘other’ facets to their respective ‘own’ facets, reflecting hypothesized relations rather than causal effects.

Many cognitive psychologists argue that external incentives do not influence learners directly; rather, their effects are mediated through how such incentives are consciously perceived and interpreted by individuals. This perspective foregrounds the learner’s subjective appraisal as a critical link in the motivational chain (Al-Hoorie, 2018). Additionally, as internal incentives (i.e., ideal L2 self_{own} and ought to L2 self_{own}) have been found to impose the strongest effects on learners’ success/attainment (e.g., Papi & Teimouri, 2012; Deci & Ryan, 2008). Applied to the present model, this view provides a rationale for distinguishing between the ‘other’ and ‘own’ facets of L2 self-guides. The ‘self_{other}’ components represent externally grounded expectations and ideals, whereas the ‘self_{own}’ components reflect the learner’s internalized and personally endorsed representations. Accordingly, the model specifies directional associations from the ‘self_{other}’ facets to their corresponding ‘self_{own}’ facets, capturing the process through which externally originating motives are cognitively internalized. By the same logic, conscious, explicit knowledge is hypothesized to be linked to implicit knowledge as a theoretically prior and more accessible level of representation that may, over time, contribute to the development of more automatized, implicit competence. To meet the objectives of the research, following questions were devised:

1. What are the effects of four motivational self-guides on L2 learners’ explicit and implicit knowledge of the easy language form (i.e., verb complements)?
2. What are the effects of the four motivational self-guides on L2 learners’ explicit and implicit knowledge of the difficult language form (i.e., unreal conditionals)?

Method

Participants

Parallel with the common recommendation for SEM on having a minimum sample size of 200, particularly for models with moderate complexity (Tabachnick & Fidell, 2019), the sample size included 259 Iranian students in different majors who were recruited through convenience sampling. They were studying English as ESP (English for specific purpose) in university,

including 134 males and 125 females. They participated in the study by taking the explicit and implicit knowledge test of two L2 forms and completing new L2MSS questionnaire. The participants' age range was from 18 to 25 with a mean of 20.2. The average level of the participants' English proficiency was pre-intermediate as determined by a B1 test (formerly known as PET) administered by the researchers.

Assessments and Measures

To address the research questions concerning the relationships between L2 self-guides and learners' explicit and implicit grammatical knowledge, a set of validated instruments was employed:

Test of explicit and implicit Knowledge

Following Ellis' (2005) attempts to devise measures of implicit and explicit knowledge of grammatical forms, the research utilized the following instruments:

1. The Oral Imitation Test (OIT); it contained 16 grammatical and ungrammatical belief statements including the target structures. The participants were asked to comment on those statements and then repeat them orally.

Reliability Justification. The OIT demonstrated high reliability, attributable to its objective scoring procedures and consistency across items. In the present study, internal consistency and test-retest reliability was calculated to ensure measurement stability. As shown in Table 2, the OIT yielded a Cronbach's alpha of 0.89, indicating high internal consistency, and a test-retest reliability coefficient of 0.85, reflecting satisfactory temporal stability.

Validity Justification: The OIT is a well-established instrument for assessing implicit linguistic knowledge, particularly L2 oral proficiency. The theoretical basis, as explored by Ellis (2005) and subsequent research, posits that successful and accurate repetition of grammatically complex sentences requires access to automatized, implicit linguistic knowledge rather than conscious rule application (Ellis, 2005; Yan et al., 2016). The OIT's construct validity is supported by its consistent correlation with other measures of L2 proficiency that tap into spontaneous language use. For instance, studies have shown strong relationships between OIT scores and performance in oral interviews or spontaneous speech tasks (Bowden, 2016). The present study's use of the OIT, therefore, aligns with established practices for measuring implicit knowledge.

2. A Timed Grammaticality Judgement Test (TGJT); it was un-computerized and asked students to decide if the sentences were grammatical, ungrammatical or they were not sure. With its inherent time pressure, the TGJT is designed to elicit rapid, intuitive responses that bypass conscious rule application. This makes the TGJT a more suitable measure of implicit grammatical knowledge, as it taps into automatized linguistic processing (Han, 2000). The identical content between the TGJT and UGJT allows for a direct comparison and a clearer differentiation between explicit and implicit knowledge, enhancing the construct validity of both measures within the study's design.
3. An Untimed Grammaticality Judgment Test (UGJT); it included the sentences the participants already heard in TGJT, but they were given as much time as they required to complete the task. It enjoyed the same content as TGJT. In fact, by allowing participants unlimited time to make judgments, the UGJT provides ample opportunity for conscious reflection, rule retrieval, and metalinguistic analysis. As such, it is widely accepted as a measure of explicit grammatical knowledge (Vafaei et al., 2017). The fact that the UGJT in this study included sentences previously heard in the

TGJT, but with extended time, reinforces its role in assessing conscious, controlled processing of grammatical forms.

Reliability Explanation: The reliability of GJTs has been extensively studied. While some variations exist depending on design, well-constructed GJTs can demonstrate good reliability. The present study's careful design, including the use of identical content for timed and untimed versions, contributes to their internal consistency. Based on general findings in the literature (e.g., Tabatabaei & Dehghani, 2012), the reliability of the TGJT and the UGJT was examined in the present study using internal consistency and test-retest measures. The TGJT demonstrated satisfactory internal consistency, with a Cronbach's alpha coefficient of 0.81, and acceptable test-retest reliability ($r = 0.76$). Similarly, the UGJT yielded a Cronbach's alpha of 0.84, indicating high internal consistency, and a test-retest reliability coefficient of 0.79, reflecting adequate temporal stability. Taken together, these indices suggest that both instruments provided reliable measurements of learners' grammatical knowledge.

Validity Explanation: The use of both Timed (TGJT) and Untimed (UGJT) Grammaticality Judgment Tests is a critical methodological choice, directly informed by Ellis's (2005) framework for distinguishing between implicit and explicit knowledge.

4. Metalinguistic Knowledge Test (MKT); it included some ungrammatical sentences, based on the two L2 forms under investigation (i.e., verb complements and hypothetical conditionals) and asked the participants to choose the rule that best explained each error out of four choices provided.

Reliability Explanation: MKTs have been shown to demonstrate acceptable reliability in prior research (e.g., Aydin, 2018). Consistent with these findings, the reliability of the MKTs used in the present study was assessed through internal consistency and test-retest procedures. The test yielded a Cronbach's alpha coefficient of 0.78, indicating satisfactory internal consistency. In addition, the test-retest reliability coefficient was 0.74, suggesting acceptable temporal stability over time. These results confirm that the MKT provided a reliable measure of learners' metalinguistic knowledge in the context of the present study.

Validity Explanation: The MKT is specifically designed to assess learners' explicit, declarative knowledge about language rules. It directly measures the ability to identify errors and articulate the underlying grammatical principles. This aligns with Ellis's (2005) conceptualization of explicit knowledge as conscious awareness and analytical understanding of linguistic forms. The MKT in this study, by asking participants to choose the rule that best explained each error from four choices, directly assesses their explicit metalinguistic awareness concerning verb complements and hypothetical conditionals. The content validity of the MKT is supported by its direct focus on the two L2 forms under investigation. The involvement of two EFL experts in examining the consistency and accuracy of the translated copies would have ensured that the MKT items comprehensively cover the relevant metalinguistic concepts and are appropriate for the learners' proficiency level.

The Motivation Questionnaire

The newly adapted motivation questionnaire (Papi et al., 2018; Papi & Khajavi, 2021) was administered to the participants. It contained 16 items of the L2 motivational self-constructs including ideal L2 self_{own/other} and ought-to L2 self_{own/other}. The answers to the questions were obtained on a six-point Likert scale with 1 showing strongly disagree and 6 showing strongly agree. The motivation questionnaire went through multiple stages of translation (into Persian),

back translation (to English), and piloting. Two EFL experts examined the consistency and accuracy of the translated copies, then 50 students who were similar to the participants of the research in every aspect, completed the same.

Reliability Explanation: The reliability of the Motivation Questionnaire based on the L2MSS was examined through internal consistency analyses for each subscale. The results indicated exceptionally high reliability across all components of the questionnaire. Specifically, the Ideal L2 Self_{own} subscale yielded a Cronbach's alpha of 0.93 ($M = 3.75$, $SD = 1.30$), while the Ideal L2 Self_{other} subscale demonstrated strong internal consistency with an alpha coefficient of 0.87 ($M = 3.71$, $SD = 0.88$). Similarly, the Ought-to L2 Self_{own} subscale showed high reliability ($\alpha = 0.91$, $M = 3.67$, $SD = 1.14$), and the Ought-to L2 Self_{other} subscale also exhibited excellent internal consistency ($\alpha = 0.90$, $M = 3.56$, $SD = 1.10$). Collectively, these findings indicate a high degree of item homogeneity within each construct and confirm the reliability of the Motivation Questionnaire for use in the present study.

Validity Explanation:

Content Validity: The meticulous adaptation process described in the present study significantly bolsters the content validity of the a/m questionnaire. This process included:

Translation into Persian: Ensuring the items are linguistically and culturally appropriate for Iranian students.

Back-translation to English: A crucial step to verify that the translated items retain their original meaning and nuances, minimizing semantic drift.

Piloting with 50 similar students: This step helps identify any ambiguities, cultural misunderstandings, or other issues with the questionnaire items in the target population, allowing for refinement before the main study.

Expert Examination: Two EFL experts examined the consistency and accuracy of the translated copies. This expert review is a standard and vital procedure for establishing content validity, ensuring that the questionnaire adequately covers the domain of L2 motivation and that its items are clear and unambiguous.

These rigorous steps collectively ensured that the questionnaire items were relevant, representative, and comprehensible to the target population, thereby establishing robust content validity.

Construct Validity: The questionnaire directly measures the Ideal L2 Self and Ought-to L2 Self, which are core components of the L2MSS framework. The theoretical underpinnings of these constructs, as discussed by Papi and Teimouri (2012) and Ryan (2008), emphasize their role in shaping L2 learning motivation and outcomes. The questionnaire's ability to capture these distinct motivational orientations, as evidenced by their separate measurement and high internal consistency (discussed below), provides strong evidence for its construct validity. The adaptation from established works by Papi et al. (2018) and Papi and Khajavi (2021) further reinforces its theoretical alignment and empirical grounding (Papi et al., 2018; Papi & Khajavi, 2021).

Procedure

A total of four grammar tests for each target structure were completed in the following order: OIT, TGJT, UGJT and MKT. At each stage, some instructions along with training examples were presented to test-takers by the researchers. The procedure for conducting each test is explained as follows:

The *OIT* was run in a single meeting between the researchers and the participants. The participants listened to 16 sentences (four grammatically-correct and four grammatically-incorrect stimuli per structure/form). Each imitated sentence was allocated a score of either 1 (the target structure was correctly provided) or 0 (the target structure was either avoided or attempted but incorrectly provided).

The *TGJT* contained both ungrammatical and grammatical statements (sixteen sentences) with respect to the complements and conditionals. Statements differed from those previously heard in *OIT*.

Similarly, in the *UGJT*, 16 statements were presented to test-takers in the written form and they were inquired to; 1- specify the grammaticality/ungrammaticality of the sentences, 2- state to what extent they were assured of their answers as suggested by Sorace (1996) by choosing a score from 0 to 100%, and 3- clarify whether they utilized rules or relied upon their feelings while responding to the items. The *MKT* was completed individually by the participants on a computer. The percentage of right answers was estimated accordingly.

Data Analysis

Structural equation modeling (SEM) was employed to test the hypothesized relationships among the constructs examined in the study. The structural models were specified and estimated using IBM AMOS (Version 22). The observed variables entered into the SEM were derived directly from the instruments described in Section 3.2. Specifically, participants' scores on the *OIT* were used as indicators of implicit grammatical knowledge, whereas scores from the *TGJT* and *UGJT* and the *MKT* served as measures of explicit grammatical knowledge. In addition, composite scores for the motivational constructs—Ideal L2 Self_{own}, Ideal L2 Self_{other}, Ought-to L2 Self_{own}, and Ought-to L2 Self_{other}—were calculated based on participants' responses to the Motivation Questionnaire and entered into the model as motivational latent variables.

To evaluate the adequacy of the proposed structural models, multiple goodness-of-fit indices were examined, including the comparative fit index (*CFI*), Tucker–Lewis index (*TLI*), root mean square error of approximation (*RMSEA*), and standardized root mean square residual (*SRMR*). These indices were selected in accordance with commonly accepted SEM reporting standards. The magnitude of structural relationships among variables, including direct, indirect, and total effects, was estimated and interpreted following Keith's (2015) guidelines, whereby standardized path coefficients (β) below .05 were considered negligible, coefficients above .05 were interpreted as small but meaningful, those exceeding .1 as moderate, and those above .25 as large effects.

Results

Following the specification of the SEM described in the previous section, the results of the preliminary and main analyses are presented in this section. Prior to testing the hypothesized structural relationships among the variables, it was necessary to examine whether the data satisfied the statistical assumptions underlying SEM.

Normal Distribution of Variables

As an initial step in the analysis, the normality of the observed variables was assessed to ensure the appropriateness of SEM estimation procedures. A normality test was therefore conducted, and

the results, as presented in Table 2, indicate that the skewness and kurtosis values for all variables fall within the acceptable range of -2 to $+2$. These findings suggest that the data are approximately normally distributed and thus suitable for subsequent SEM analyses.

Table 2

Assessment of Normality for Study Variables (N=259)

Variable	Skewness	Kurtosis
Ideal L2 Self (own)	-0.45	0.21
Ideal L2 Self (other)	-0.38	0.15
Ought-to L2 Self (own)	-0.52	0.33
Ought-to L2 Self (other)	-0.41	0.18
Explicit Knowledge (Easy)	-0.29	-0.11
Implicit Knowledge (Easy)	-0.35	-0.08
Explicit Knowledge (Difficult)	-0.31	-0.14
Implicit Knowledge (Difficult)	-0.39	-0.05

Correlation Matrix

A correlation matrix was computed to examine the relationships between the variables of the study. The results, presented in Table 3, show significant correlations between the motivational self-guides and the knowledge components, which provides a preliminary basis for the subsequent SEM analyses.

Table 3

Correlation Matrix for the Study Variables

Variable	1	2	3	4	5	6	7	8
1. Ideal L2 Self (own)	1							
2. Ideal L2 Self (other)	.79**	1						
3. Ought-to L2 Self (own)	.58**	.61**	1					
4. Ought-to L2 Self (other)	.55**	.59**	.79**	1				
5. Explicit Knowledge (Easy)	.40**	.32**	.63**	.50**	1			
6. Implicit Knowledge (Easy)	.45**	.35**	.23**	.18**	.28**	1		
7. Explicit Knowledge (Difficult)	.37**	.29**	.52**	.41**	.75**	.31**	1	
8. Implicit Knowledge (Difficult)	.36**	.28**	.30**	.24**	.46**	.68**	.49**	1

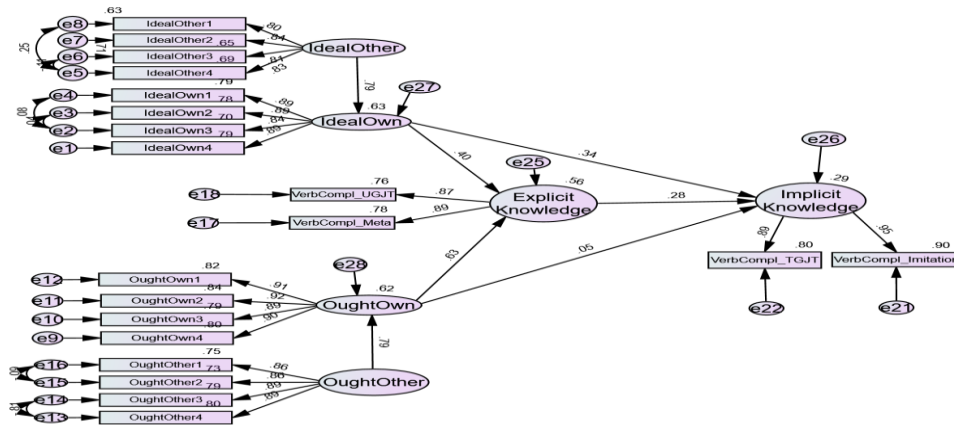
Note. $N = 259$. Values represent Pearson correlation coefficients. Explicit Knowledge (Easy/Difficult) and Implicit Knowledge (Easy/Difficult) refer to performance on test items categorized by task difficulty. *Ideal L2 Self* (own/other) and *Ought-to L2 Self* (own/other) correspond to learners' self-guides derived from the L2 Motivational Self System questionnaire. ** indicates correlations significant at the 0.01 level (two-tailed).

Structural Model of Motivational Self-Guides and Explicit/Implicit Knowledge of Easy L2 Forms

To determine the model fit and to specify the relationships between the variables, the complete structural model was drawn to yield results for the analysis. In fact, SEM was used to test the proposed structural model with six variables under study (see Figure 2).

Figure 2

The structural model of L2MSS and Explicit/Implicit knowledge of easy L2 form with standardized estimates



Note. *Ideal_{other}* = ideal L2 self_{other}; *Ideal_{own}* = ideal L2 self_{own}; *VerbCompl.* = verb complement items; *Ought_{own}* = ought to L2 self_{own}, *Ought_{other}* = ought to L2 self_{other}

The fit indices for the full structural model have been illustrated in Table 4.

Table 4

Fit Statistics of the Structural Model

X ² (CMIN/DF)	df	RMSEA	CFI	TLI	SRMR
1.282	157	0.033	0.990	0.988	.056

Note. χ^2 = chi-square statistic; CMIN/DF = normed chi-square (χ^2/df); RMSEA = root mean square error of approximation; CFI = comparative fit index; TLI = Tucker–Lewis index; SRMR = standardized root mean square residual. Values of CMIN/DF below 3.0, RMSEA and SRMR below .08, and CFI and TLI above .90 indicate acceptable model fit, while values above .95 indicate excellent fit. All reported fit indices correspond to the final estimated structural model.

The structural model showed good fit to the data:

- Chi square = 201.331, $df = 157$, $p = .01$ (CMIN / DF = 1.282)
- CFI = 0.990
- TLI = 0.988
- RMSEA = 0.033 (90% CI: 0.017-0.046)
- SRMR = 0.056

Overall, the six-factor correlated model linking L2MSS components with explicit and implicit knowledge of easy L2 forms showed an adequate fit to the data. Figure 2 presents the corresponding structural model with all standardized regression weights estimated using the maximum likelihood (ML) method.

Magnitude effects of variables under study

To clarify the relationships among the variables in the model, Table 5 reports the standardized and unstandardized path coefficients, including direct, indirect, and total effects.

Table 5

Standardized (Unstandardized) Total, Indirect, and Direct Effects of the L2MSS variables on Explicit and Implicit Knowledge of the Easy Language Forms

Variables	Direct Effect on Explicit Knowledge	Direct Effect on Implicit Knowledge	Indirect Effect on Explicit Knowledge	Indirect Effect on Implicit Knowledge	Total Effect on Explicit Knowledge	Total Effect on Implicit Knowledge
Ideal L2 self _{own}	.400 (.076)	.336 (.092)	-----	.111 (.031)	.400(.076)	.447 (.123)
Ought-to L2 self _{own}	.631 (.104)	.055 (.013)	---	.176 (.042)	.631(.104)	.230(.055)
Ideal L2 self _{other}	-----	-----	.317 (.071)	.354 (.115)	.317(.071)	.354(.115)
Ought-to L2 self _{other}	-----	-----	.499 (.087)	.182 (.046)	.499(.087)	.182(.046)
Explicit Knowledge	-----	.278 (.402)	-----	-----	-----	.278(.402)

Focusing on the estimated structural relationships, the first variable, ideal L2 self_{other} was a significant positive predictor of ideal L2 self_{own} ($\beta = .79, p < .01, R^2 = 0.62$, a very large effect) due to the substantial effects it yields. The second variable, ideal L2 self_{own} was a significant positive predictor of implicit knowledge based on its total effect ($\beta = .44, p < .010, R^2 = 0.19$, a large effect) which consists of a large direct effect ($\beta = .34, p < .01, R^2 = 0.11$) and a moderate indirect effect [$0.28 \times 0.4 = 0.11$] mediated through its explicit knowledge, with a standardized indirect effect of $\beta = .28 (p < .01)$ explaining 7% of the variance ($R^2 = .07$), and a standardized total effect of $\beta = .40 (p < .01)$ accounting for 16% of the variance ($R^2 = .16$).

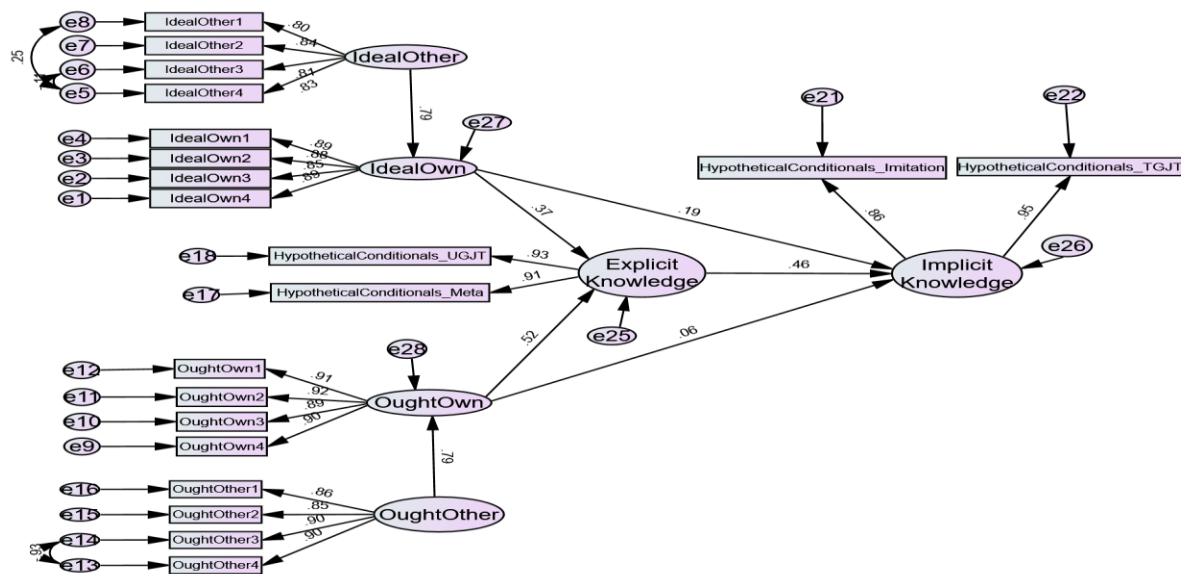
The third variable, the explicit knowledge was a significant positive predictor of implicit knowledge due to its relatively large effects ($\beta = .28, p < .01, R^2 = 0.07$, a large effect). The fourth variable, ought to L2 self_{other} was a significant positive predictor of ought to L2 self_{own} ($\beta = .79, p < .01, R^2 = 0.62$, a very large effect) due to its substantial effects. The fifth variable, ought to L2 self_{own} was a significant positive predictor of implicit knowledge based on its total effect ($\beta = .22, p < .01, R^2 = 0.04$, a moderate effect) that consists of a small direct effect ($\beta = .05, p < .01, R^2 = 0.00$) and a moderate indirect effect [i.e., $0.63 \times 0.28 = 0.17$] mediated through its explicit knowledge, with a significant indirect effect of $\beta = .63 (p < .01)$ accounting for 39% of the variance ($R^2 = .39$), and a smaller total effect of $\beta = .28 (p < .01)$ explaining 7% of the variance ($R^2 = .07$).

Structural Model of Motivational Self-Guides and Explicit/Implicit Knowledge of Difficult L2 Forms

As mentioned earlier, SEM was used to measure the proposed structural model with six variables. Figure 3 demonstrates the complete structural model.

Figure 3

The structural model of L2MSS and Explicit/Implicit knowledge of difficult L2 form with standardized estimates



Note. $Ideal_{other}$ = ideal L2 self_{other}; $Ideal_{own}$ = ideal L2 self_{own}; $Ought_{own}$ = ought to L2 self_{own}, $Ought_{other}$ = ought to L2 self_{other}

The fit indices for the full structural model have been illustrated in Table 6.

Table 6

Fit Statistics of the Structural Model

X ² (CMIN/DF)	df	RMSEA	CFI	TLI	SRMR
1.557	160	0.046	0.980	0.976	.0609

The structural model displayed good fit to the data:

- Chi square = 249.041, $df = 160$, $p = .01$ ($CMIN / DF = 1.557$)
- $CFI = 0.980$
- $TLI = 0.976$
- $RMSEA = 0.046$ (90% CI: 0.035-0.057)
- $SRMR = .0609$

Overall, the six-factor model linking L2MSS components with explicit and implicit knowledge of difficult L2 forms demonstrated an adequate fit to the data. Figure 3 illustrates the finalized structural model, including all standardized regression weights estimated using the maximum likelihood (ML) method.

Magnitude effects of variables under study

To provide a more vivid picture of the variables' impact on each other, the magnitude of their standardized/unstandardized coefficients including total, indirect, and direct effects were presented in Table 7.

Table 7

Standardized (Unstandardized) Total, Indirect, and Direct Effects of the L2MSS variables on Explicit and Implicit Knowledge of the Difficult Language Forms

Variables	Direct Effect on Explicit Knowledge	Direct Effect on Implicit Knowledge	Indirect Effect on Explicit Knowledge	Indirect Effect on Implicit Knowledge	Total Effect on Explicit Knowledge	Total Effect on Implicit Knowledge
Ideal L2 self _{own}	.367 (.128)	.190 (.044)	-----	.169 (.040)	.367(.128)	.359 (.084)
Ought-to L2 self _{own}	.523 (.157)	.059 (.012)	-----	.241 (.049)	.523(.157)	.300 (.061)
Ideal L2 self _{other}	-----	-----	.291 (.119)	.284 (.079)	.291 (.119)	.284 (.079)
Ought-to L2 self _{other}	-----	-----	.413 (.131)	.237 (.051)	.413(.131)	.237 (.051)
Explicit Knowledge	-----	.460 (.310)	-----	-----	-----	.460 (.310)

In terms of paths and magnitude of effects, the first variable, ideal L2 self_{other} was a significant positive predictor of ideal L2 self_{own} ($\beta = .79, p < .01, R^2 = 0.62$, a very large effect) due to substantial effects it yields. The second variable, ideal L2 self_{own} was a significant positive predictor of implicit knowledge based on its total effect ($\beta = .36, p < .01, R^2 = 0.12$, a large effect) which consists of a moderate direct effect ($\beta = .19, p < .01, R^2 = 0.03$) and a moderate indirect effect [i.e., $0.37 \times 0.46 = 0.17$] via explicit knowledge with a moderate effect of $\beta = .37 (p < .01)$ accounting for 13% of the variance ($R^2 = .13$), and a stronger effect of $\beta = .46 (p < .01)$ explaining 21% of the variance ($R^2 = .21$). The third variable, the explicit knowledge was a significant positive predictor of implicit knowledge ($\beta = .46, p < .01, R^2 = 0.21$) due to its large influences. The fourth variable, ought to L2 self_{other} was a significant positive predictor of ought to L2 self_{own} ($\beta = .79, p < .01, R^2 = 0.62$) due to its substantial effects. The fifth variable, ought to L2 self_{own} was a significant positive predictor of implicit knowledge based on its large total effect ($\beta = 0.29, p < .01, R^2 = 0.09$) which consists of a small direct effect ($\beta = .06, p < .01, R^2 = 0.00$) and a moderate indirect effect [i.e., $0.52 \times 0.46 = 0.23$] via explicit knowledge with a strong effect of $\beta = .52 (p < .01)$ accounting for 27% of the variance ($R^2 = .27$), and a slightly smaller effect of $\beta = .46 (p < .01)$ explaining 21% of the variance ($R^2 = .21$).

Noticeable Patterns emerging out of the Analysis of the Models

The analysis of two structural models unveiled several meaningful patterns summarized as follow;

- Ideal L2 self_{other} could substantially and directly influence ideal L2 self_{own} and it could indirectly affect the participants' explicit and implicit knowledge of both simple and difficult structures.
- Ideal L2 self_{own} could directly have large effects on explicit knowledge of both simple and difficult L2 structures and could directly exert large (.336) and moderate (.190) effects on implicit knowledge of both simple and difficult L2 structures respectively and it could indirectly (via explicit knowledge) exert only moderate effects on implicit knowledge of both simple and difficult L2 structures. Additionally, the total effects of ideal L2 self_{own} on

the implicit knowledge of the simple and difficult L2 structures are of very large (.447) and large (.359) magnitudes respectively.

- Ought-to L2 self_{other} could substantially and directly influence ought to L2 self_{own} and it could indirectly (via ought to L2 self_{own}) affect the participants' explicit and implicit knowledge of both simple and difficult structures.

- Ought-to L2 self_{own} could directly have very large effects on explicit knowledge of both types of L2 structures. While it could directly exert small effects on implicit knowledge of both simple and difficult L2 structures and it could indirectly (via explicit knowledge) exert only moderate effects on implicit knowledge of both simple and difficult L2 structures. Additionally, the total effects of ought to L2 self_{own} on the implicit knowledge of the simple and difficult L2 structures are of moderate (.230) and large (.300) magnitudes respectively.

Discussion

The present study aimed to examine how components of the L2MSS influence L2 learners' explicit and implicit grammatical knowledge of easy and difficult structures, both directly and indirectly, through the mediating role of explicit knowledge. By testing parallel structural models, the study sought to clarify the relative contribution of ideal and ought-to self-guides to different types of L2 knowledge and to determine whether these relationships varied as a function of task difficulty. The findings indicate that ideal L2 self_{other} exerted a strong positive influence on ideal L2 self_{own} across both easy and difficult L2 forms, supporting the theoretical assumption that socially grounded expectations are internalized and transformed into personally endorsed future self-images (Teimouri, 2017). This internalization process appears to be a key motivational mechanism through which significant others—such as parents, teachers, and family members—shape learners' long-term engagement with L2 learning.

More importantly, ideal L2 self_{own} emerged as the most influential motivational predictor of implicit knowledge, exerting both direct and indirect effects for both levels of task difficulty. From a theoretical perspective, this finding aligns with L2MSS theory, which conceptualizes the ideal L2 self as a promotion-focused, internally regulated motive that sustains sustained effort and engagement (Dörnyei & Ushioda, 2009). Rather than merely reflecting external expectations, the ideal L2 self—own appears to support deeper cognitive engagement with language forms, thereby facilitating the development of implicit knowledge.

A central contribution of this study lies in demonstrating the partial mediating role of explicit knowledge in the development of implicit knowledge. Explicit knowledge accounted for a substantial proportion of variance in implicit knowledge for both easy and difficult structures, with stronger mediation effects observed for difficult forms. This pattern suggests that explicit knowledge serves as an important developmental resource, particularly when learners are confronted with structurally complex or less salient grammatical features. These findings are consistent with theoretical and empirical work suggesting that explicit knowledge can precede and support the emergence of implicit knowledge under certain learning conditions (Ellis, 2006; Goo et al., 2015). Rather than assuming a simultaneous development of both knowledge types, the results support a developmental sequencing account, whereby explicit representations may gradually become automatized through repeated processing and use.

The prominent role of explicit knowledge observed in this study must be interpreted in light of the participants' instructional context. The learners were educated in an EFL setting characterized by form-focused, test-oriented instruction and limited opportunities for spontaneous communicative use of English outside the classroom. Under such conditions, learners are more likely to develop robust explicit knowledge while having fewer opportunities to proceduralize this knowledge into implicit competence. This contextual explanation aligns with prior research emphasizing the importance of meaningful exposure and interaction for implicit knowledge development (Ellis, 2006). In the absence of immersive or communicative environments, explicit knowledge may function as the primary pathway through which grammatical learning occurs, especially for complex structures.

In contrast to the ideal L2 self, the ought-to L2 self_{own} showed no significant direct effect on implicit knowledge. Instead, its influence was largely indirect, operating through explicit knowledge. This pattern suggests that ought-to self-guides, which are grounded in prevention-focused concerns such as obligation and avoidance of negative outcomes (Higgins et al., 2001), may promote learning strategies that emphasize accuracy, rule awareness, and error avoidance rather than automatized language use. Such motivational orientations are likely to foster conscious attention to linguistic form, thereby strengthening explicit knowledge but contributing less directly to implicit knowledge development. This interpretation is consistent with previous findings indicating that ought-to self-guides are associated with controlled processing and strategic learning behaviors rather than spontaneous language use (Papi et al., 2018).

In sum, the results suggest that ideal L2 self_{own} constitutes the most influential motivational pathway for implicit knowledge development, while ought-to L2 self_{own} plays a secondary, indirect role mediated by explicit knowledge. This contrast highlights the differential functional roles of promotion-focused and prevention-focused motivational systems in L2 learning. Whereas ideal self-guides appear to support deeper and more automatized learning processes, ought-to self-guides primarily facilitate controlled, explicit learning. By integrating motivational theory with models of L2 knowledge development, the present study underscores the importance of considering not only whether learners are motivated, but how they are motivated, and through which cognitive mechanisms motivation translates into different types of linguistic knowledge.

Conclusion

This study examined how components of the L2MSS relate to learners' explicit and implicit knowledge of easy and difficult L2 grammatical forms. Overall, the findings demonstrate that motivational self-guides influence L2 knowledge development through distinct pathways. Socially grounded self-guides (ideal and ought-to L2 self_{other}) were consistently internalized as self-endorsed motivations, which in turn played a central role in shaping learners' explicit and implicit grammatical knowledge. Across both levels of structural difficulty, explicit knowledge emerged as a key mechanism linking motivation to implicit knowledge development. By integrating motivational theory with models of L2 knowledge learning, the study contributes to a more nuanced understanding of how different types of motivation support different learning processes. In particular, ideal L2 self_{own} appeared to exert a stronger and more direct influence on implicit knowledge, whereas ought-to L2 self_{own} primarily operated indirectly through explicit knowledge.

The findings suggest that fostering learners' ideal L2 self may be especially beneficial for promoting deeper, more automatized language knowledge. Instructional practices that help

learners envision meaningful future L2 selves—such as goal-oriented tasks, exposure to successful role models, and opportunities for self-reflection—may enhance engagement beyond surface-level learning. At the same time, the strong role of explicit knowledge highlights the continued importance of form-focused instruction, particularly in EFL contexts where opportunities for naturalistic exposure are limited. From a theoretical perspective, the results underscore the value of examining motivational constructs not in isolation, but in relation to cognitive mechanisms underlying L2 learning.

Several limitations should be acknowledged. First, the study was conducted in an EFL context with limited communicative exposure, which may have constrained the development of implicit knowledge and influenced the observed mediation effects. Second, the cross-sectional design limits causal interpretation of the relationships among motivational and cognitive variables. Future research could employ longitudinal or experimental designs to trace developmental changes in explicit and implicit knowledge over time. Additionally, expanding the range of grammatical structures and including learners from diverse instructional contexts would allow for broader generalization of the findings.

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Conflict of interests

The authors declare that they have no conflict of interest.

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