How do beginner learners study German? Evidence from learning strategies, memorisation and cross-linguistic interference[1]

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Abstract

This study examines study techniques, memorisation processes, and linguistic interference in the acquisition of German as a second language (L2) at the A1 level within a university translation programme in Chile. The problem addressed concerns learners' heavy reliance on limited study techniques that primarily activate short-term memory and the impact of cross-linguistic interference on early lexical and grammatical development. The study is framed within Second Language Acquisition research on learning strategies, memory systems, and language transfer and interference. A mixed-methods design was employed. Qualitative data were collected through semi-structured interviews with three experienced German instructors and analysed using semantic content analysis. Quantitative data were obtained from a validated questionnaire administered to 17 first-year students and analysed using descriptive statistics. The results indicate that learners predominantly employ cognitive and memory-based strategies such as repetition, vocabulary lists, and rule memorisation, while metacognitive and social strategies are underused. Teachers' perceptions align with students' reports, particularly regarding the central role of repetition and short-term memorisation. Linguistic interference was observed mainly at the syntactic level from Spanish and at the phonetic level from English. The study concludes that explicit instruction in a wider range of learning and metacognitive strategies is necessary to support more durable lexical and grammatical acquisition in German as an L2.

Keywords: German as a foreign language, language interference, learning strategies, memorisation process, study techniques

1 This article is based on a research project carried out with the academic guidance of the co-authors.

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¿Cómo estudian alemán los aprendientes principiantes? Evidencia de estrategias de aprendizaje, memorización e interferencia interlingüística[1]

Resumen

Este estudio examina las técnicas de estudio, los procesos de memorización y la interferencia lingüística en la adquisición del alemán como segunda lengua (L2) en el nivel A1 dentro de un programa universitario de traducción en Chile. El problema abordado se relaciona con la fuerte dependencia de los estudiantes de un conjunto limitado de técnicas de estudio que activan principalmente la memoria a corto plazo, así como con el impacto de la interferencia interlingüística en el desarrollo léxico y gramatical inicial. El estudio se enmarca en la investigación en adquisición de segundas lenguas, particularmente en los enfoques sobre estrategias de aprendizaje, sistemas de memoria y transferencia e interferencia lingüística. Se empleó un diseño metodológico mixto. Los datos cualitativos se recopilaron mediante entrevistas semiestructuradas a tres docentes con experiencia en la enseñanza del alemán y se analizaron mediante análisis de contenido semántico. Los datos cuantitativos se obtuvieron a partir de un cuestionario validado aplicado a 17 estudiantes de primer año y se analizaron mediante estadística descriptiva. Los resultados indican que los aprendientes emplean predominantemente estrategias cognitivas y de memoria, tales como la repetición, la elaboración de listas de vocabulario y la memorización de reglas, mientras que las estrategias metacognitivas y sociales se encuentran subutilizadas. Las percepciones del profesorado coinciden con los reportes de los estudiantes, especialmente en lo relativo al papel central de la repetición y la memorización a corto plazo. La interferencia lingüística se observó principalmente a nivel sintáctico desde el español y a nivel fonético desde el inglés. El estudio concluye que es necesaria una instrucción explícita en una gama más amplia de estrategias de aprendizaje y metacognitivas para favorecer una adquisición léxica y gramatical más duradera del alemán como L2.

Palabras clave: alemán como lengua extranjera, estrategias de aprendizaje, interferencia lingüística, procesos de memorización, técnicas de estudio

1 Este artículo se basa en un proyecto de investigación llevado a cabo bajo la dirección académica de los coautores.

Introduction

In the Chilean subsample, German-to-Spanish was the third most frequently reported working language pair among translations into Spanish, after English-to-Spanish and French-to-Spanish. When Spanish-to-English is included among all reported directions, German-to-Spanish ranks fourth overall (Diéguez Morales et al., 2014). These data underscore the necessity for professionals involved in these translation activities to possess advanced linguistic and methodological competencies to meet market demands effectively. This study is situated within the framework of a bachelor's degree program in German translation offered by a traditional university in southern Chile. The course under analysis forms part of the first-year curriculum, spanning an academic year (two semesters), and is designed to achieve proficiency in German as a second language (L2) at the A1 level, as defined by the Common European Framework of Reference for Languages (CEFR). The course comprises four hours of practical exercises, two hours of theoretical instruction, two hours of laboratory work, and four hours of independent study per week. Participants in the course are native speakers of Chilean Spanish (L1). The article is structured as follows. First, we establish a theoretical framework encompassing critical constructs such as language interference, study techniques, and strategies within Second Language Acquisition (SLA), alongside an exploration of memory processes, specifically sensory memory, short-term memory, and long-term memory. Subsequently, we detail the methodological approach, including participant demographics and instrument design. This is followed by an in-depth qualitative analysis of interview data and a quantitative examination of survey results. The discussion synthesises findings around three focal areas: study techniques, memorisation processes, and linguistic interference, providing insights into their implications for L2 acquisition in this context.

Theoretical framework

Language interference

SLA is a process through which learners acquire levels of communicative competence enabling them to interact in another linguistic community (Santos Gargallo, 2004). It is common for certain processes related to the dominance of one language over another to manifest themselves, such as linguistic interference and transfer (Silva-Corvalán & Enrique-Arias, 2017; Thomason, 2001; Weinreich, 1953/2010).

We understand linguistic interference as the deviation from the norm in either language, manifested in the speech of bilingual-multilingual individuals, as a result of their familiarity with more than one system (Weinreich, 1953/2010). This linguistic phenomenon, which can manifest itself at all levels of a language, is usually bidirectional and is produced by structural similarity. Thus, the learner transfers structures from one language to the other and vice versa, which not only results in erroneous and/or ungrammatical constructions—also known as negative transfer (Arkhipova & Vlavatskaya, 2019; Conchambay, 2019; Huamán, 2019)—but also inhibits the acquisition of the L2 (Weinreich, 1953/2010).

In contrast, language transfer occurs when the structural closeness between two languages facilitates SLA. In this context, learners increase their knowledge and linguistic skills through a transfer of habits and elements (Cajamarca, 2017; Martínez, 2018; Morales, 2018).

Study techniques and strategies in SLA

Study techniques are specific procedures and activities that facilitate memorisation, learning and acquisition of linguistic content. They stimulate the skills necessary for learning in each situation. Their proper use

is directly related to the improvement and strengthening of students' academic performance (Zambrano, 2019; Soto, 2020). Learning strategies "encompass the cognitive, metacognitive and resource management behaviours, methods, techniques and tactics that learners use to perform a given task" (Suárez Valenzuela & Suárez Riveiro, 2018, p. 168, our translation).

Knowledge and good use of various study techniques and strategies are fundamental for academic success. Indeed, "students with a broad knowledge of learning strategies have a wide repertoire to choose from when faced with different learning tasks or when studying different disciplines" (Ainscough et al., 2020, p. 2).

In SLA, the most widely accepted learning strategies used by different authors are grouped into six categories: cognitive, affective, social, memory, compensatory and metacognitive (Djahimo et al., 2019; Ehrman et al., 2003).

Based on the proposal by Ehrman et al. (2003), we developed a table (Table 1) that compiles the six learning strategies.

Table 1. *Compilation of learning strategies in SLA*

Learning strategies	Definition	Study techniques
1. Cognitive	Direct manipulation of language content.	Notes, summaries, synthesis, sketches, diagrams.
2. Affective	Identification of one's current mood and levels of anxiety.	Talking about feelings, rewarding oneself for good performance, using deep breathing or positive self-understanding.
3. Social	Understanding the target culture and language.	Asking questions to get feedback, asking for clarification on difficult content, asking for help with a language task, talking to a native speaker, exploring cultural and social norms, adding target language related content to everyday life.
4. Memory	Linking a word or concept with another from a language.	Acronyms, rhymes, using images that link meaning and concept, keyword method, body gestures, mechanical means (flashcards), repetition, imagery.
5. Compensation	Neutralising idiomatic errors.	Gesturing, looking up for synonyms, coming up with ideas based on context.
6. Metacognitive	Identifying learning style preferences.	Planning tasks, compiling and organising materials, organising a study space, creating a schedule, keeping track and checking errors, evaluating the success rate of a language task and the learning strategy and chosen study technique, interlanguage.

Source: Adapted from Ehrman et al. (2003).

Memorisation processes in SLA

Memory is a cognitive-psychological process and a neurocognitive function that enables the recording and storage of information in the human brain for later use. It serves for complex learning and intellectual processes such as reasoning. While memory can function involuntarily, it becomes a process of memorisation when deliberately manipulated to reproduce information as accurately as possible (Ángeles, 2019; Azogue, 2019; Morgan et al., 2020; Vernaza, 2019). This complex process unfolds in stages that can extend over time, depending on the depth and focus of the memorisation effort. Within the context of second language acquisition (SLA), three primary conventions are integral to understanding how memorisation supports learning. The first stage, sensory memory, acts as a short-term buffer where information is temporarily retained. This stage allows the brain to process sensory input and perceive the environment as a coherent

whole rather than as fragmented stimuli. Sensory memory provides the foundation for subsequent processes by interpreting stimuli and facilitating transitions into short-term memory. If not properly processed, the information is quickly forgotten (Stangor & Walinga, 2014). Chaves Pava and Tapiero Beltrán (2018) emphasise that sensory memory is critical in SLA, describing it as the root of subsequent memory processes due to its role in perceiving and interpreting environmental stimuli. Short-term memory serves as a temporary storage system where recently captured information is held for brief periods, typically between 15 and 30 seconds. It enables the retention of transient impressions needed for immediate tasks. Within this stage, working or operative memory plays a crucial role, as it involves actively managing information for cognitive tasks. This functional aspect of memory allows learners to hold and manipulate relevant information, making it essential for higher-order cognitive processes in SLA (Adam & Serences, 2019; Muchiut et al., 2019; Umaran et al., 2019). Long-term memory, by contrast, is responsible for retaining information over extended periods or even permanently. This stage supports the execution of all memory processes and facilitates the organisation of knowledge, particularly semantic memory, which pertains to language, facts, and concepts. Long-term memory is central to SLA, as it enables learners to consolidate and retrieve linguistic knowledge necessary for language comprehension and production (Álvarez, 2019; Llanga Vargas et al., 2019; Smith et al., 2019).

German as an L2

Studies have shed light on relevant aspects of German language learning. López-Barrios et al. (2017) investigated the impact of plurilingualism on the lexical development of German learners in comparison to English learners. Despite the use of Oxford's (1990) learning-strategy framework, their findings did not indicate a positive effect of plurilingualism on the acquisition of vocabulary among German learners. Variations were observed, potentially influenced by external factors such as instructional practices, materials, and resource accessibility. Internal motivation may play a crucial role in this context. Furthermore, Bruen (2001) conducted a mixed-methods study employing questionnaires and qualitative interviews to explore language learning strategies. The research revealed that proficient learners employ a diverse range of language learning strategies, with a particular emphasis on cognitive and metacognitive strategies. Moreover, specific strategies were found to be significantly correlated with higher levels of oral proficiency. The findings indicated that more proficient learners employ language learning strategies in a structured and purposeful manner across various situations and tasks. Regarding the challenges faced in learning German as an L2, Borrueco (2019) asserts that "Difficulty arises with some central aspects such as declension, both in nominal and adjectival contexts, inherent challenges of the German verbal system such as participle formation, passive voice, and hypotaxis, all of which have characteristics that diverge significantly from the native language" (p. 4, our translation). Additionally, Walton (2022) proposes strategies to enhance student motivation in a German as a foreign language class. The author suggests that students are more likely to be motivated to actively participate when clear, measurable goals are set. Furthermore, providing ample opportunities for peer interaction through class activities is highlighted to positively impact student motivation.

Methodology

Given the nature of the object of study, the methodological approach was mixed. Critically, we used qualitative and quantitative techniques and instruments, which made it easier to combine the two methods and their results (Sánchez-Gómez et al., 2020). The sample was non-probabilistic, and the type of sampling was by accessibility and convenience.

Participants

We surveyed 17 out of 20 students enrolled in the first German course. The participants are in their first year of their bachelor's degree. The course is German A1. The participants do not take translation subjects,

as they focus on learning the language they work in within the first year of the bachelor's degree. According to data from the Chilean Higher Education Information Service, and the Chilean Undersecretary of Higher Education through Transparency Law 20.285, the average age of first-year bachelor students in this bachelor's degree is 21 years old, the average retention rate in the first year is 82%, and the distribution by type of school of origin is 30% public, 60% mixed funding and 10% private. Moreover, three teachers of the same German course who have been teaching the language for more than three years were interviewed. Teachers are between 30 and 45 years old. The selection protocol for participants involved accessibility-based sampling. Inclusion criteria included enrolment in the course, absence of advanced-level German language proficiency due to prior study, and attendance exceeding 80% at the time of study participation. Following the ethical guidelines for research issued by Universidad Católica de la Santísima Concepción, the students were informed about the objectives, aims, and implementation of the study, and asked to digitally sign an assent form before the beginning of the survey.

Instruments

We utilised a self-authored questionnaire to collect data on participants' academic background, study habits, and strategies specific to learning German. This customised instrument was necessary to address the objectives of our research, ensuring the collection of relevant and precise information. The questionnaire includes nine dimensions, focusing on areas such as error detection and the actions students take to resolve them. Expert validation was conducted with two linguistics specialists and two education experts, whose recommendations were incorporated into the final version. Cronbach's alpha, calculated using IBM SPSS Statistics software, was .837, indicating high internal consistency and reliability for the 106-item instrument.

Furthermore, a semi-structured interview was designed to explore teachers' perceptions across seven predefined categories. This instrument underwent expert review, and their suggestions were integrated as appropriate. To validate the data categorisation process, an expert was trained to code one interview, representing 45% of the total corpus. The inter-observer agreement achieved a strong *kappa index (κ = .71)*, reflecting substantial agreement, according to Landis and Koch's (1977) scale. Coder training and revisions to the codebook were used to minimise ambiguity, particularly where categories overlapped. The complexity of overlapping categories was carefully managed to enhance coding accuracy.

Data analysis

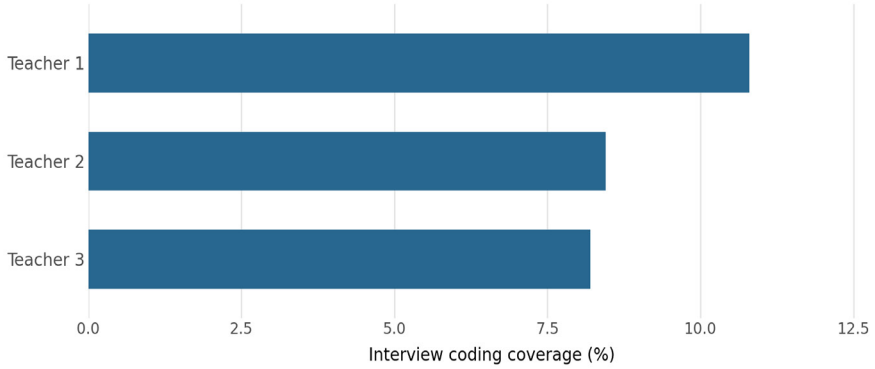
We carried out a statistical analysis in IBM SPSS Statistics software to establish the detailing, explanation and summary of the data, in the form of observations, to facilitate their interpretation (Bryman, 2012). This was applied for the nine dimensions of the questionnaire and the results were expressed in graphs for description. We also applied semantic content analysis to the interviews through the systematic coding of meaningful units in discourse excerpts (Neuendorf, 2019). This systematic, organised, and structured analysis provides valuable information, as hermeneutic inferences and interpretations of the analysed discourses and texts can be drawn from the frequencies and emerging categories.

Results

The results of the analysis of the *study techniques, memorisation processes, and linguistic interference nodes* are presented below. In this way, the nodes are interpreted separately based on the perceptions expressed by each interviewed teacher for each of the analysed nodes. These nodes have been selected due to their importance for the purpose of this research.

Interview Results: qualitative analysis

Figure 1 *Node encoding for study techniques.*

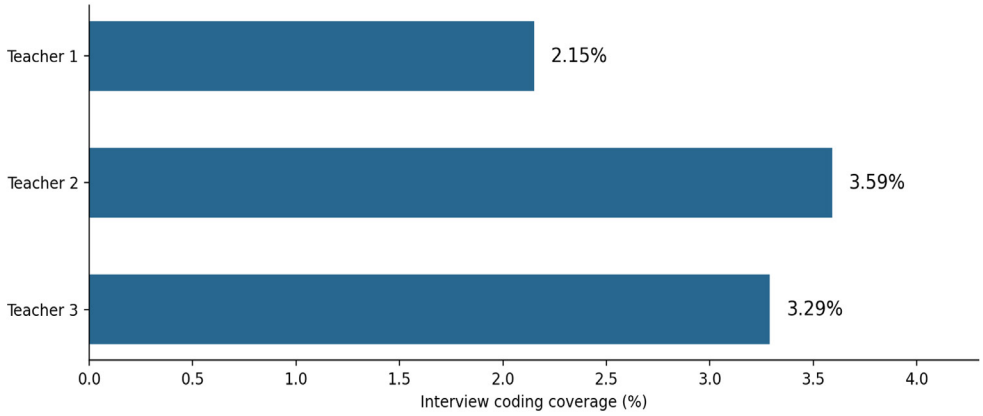


Source: Created by the authors using NVivo 12.

It is possible to interpret from Figure 1 that, for the teachers, study techniques play an important role in the students' SLA. This observation is consistent with the teachers' interview statements:

> Lists (of vocabulary) or copying what has already been written into another notebook. Uh... they highlight. What they do use a lot are colour highlighters, I mean, in general, colours are something that they use a lot (...)
>
> (Teacher 1). Reference 10 - Coverage 0.86%. Node: Study techniques

Figure 2 *Node encoding for memorisation processes.*



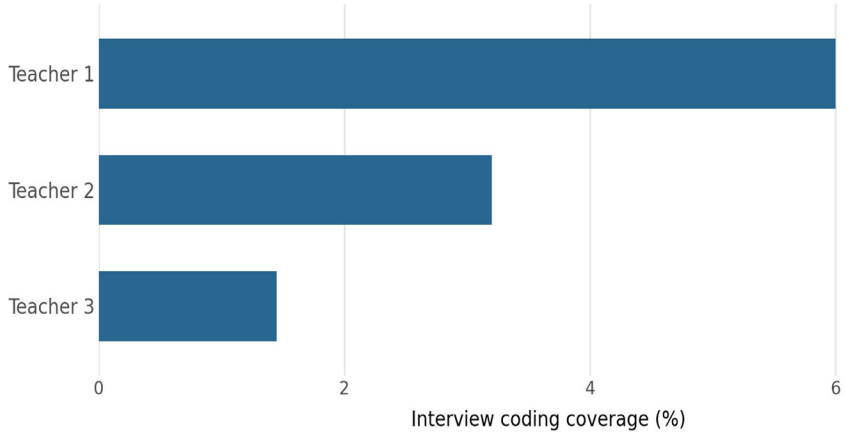
Note. Created by the authors using NVivo 12.

From Figure 2 it can be interpreted that, for Teacher 1 (2.15%), Teacher 2 (3.59%), and Teacher 3 (3.29%), memorisation processes are essential in learning German as a foreign language. However, only actions that stimulate short-term memory are mentioned.

> (...) basically the act of repetition, although it is sometimes criticised, is what also leads to progress, I mean, structure repetition is a must. You cannot make progress trying to cover as much as possible in... structure acquisition if the most basic structures have not yet been properly learned.

(Teacher 2). Reference 4 - Coverage 0.90%. Node: *Memorisation processes*

Figure 3 *Node encoding for language interference.*



Source: Created by the authors using NVivo 12.

Figure 3 shows the percentages of coverage of linguistic *interference* encoding. Teachers identify the cases in which there would be more presence of interference.

> Sometimes there may be some interference with the vocabulary. Yes, there could be some interference (...) with English, but I would say that the interference decreases, I mean, as the course progresses, this interference becomes less and less noticeable. The interference that is always more noticeable is in their pronunciation.

(Teacher 1). Reference 11 - Coverage 0.86%. Node: *Language interference*.

I think verbal aspects, verb tenses, but it can also be like Spanish. So, it may be that it is interference between Spanish and English.

(Teacher 3). Reference 2 - Coverage 0.90%. Node: *Language interference*.

Table 2 *Word frequency in the interviews*

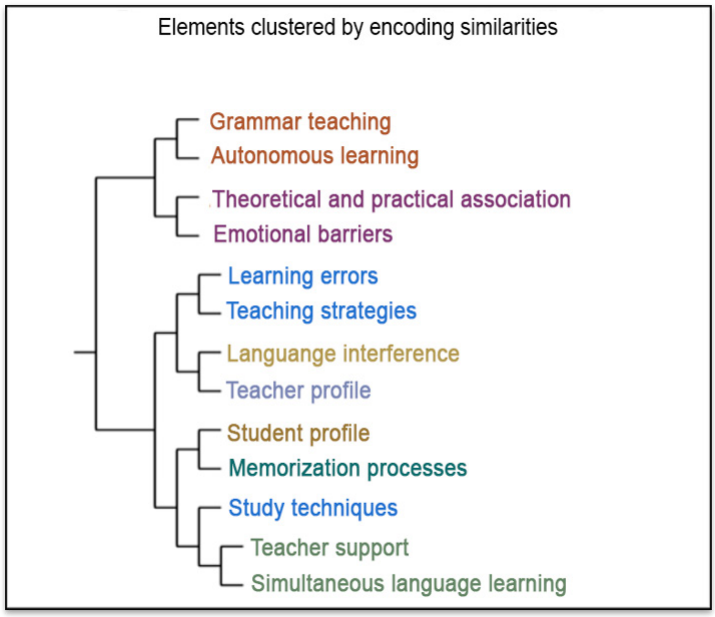
Word	***Frequency***	***Weighted percentage (%)***
students	95	0.48
strategies	42	0.21
learning	37	0.19
grammar	29	0.15
translation	23	0.12
important	20	0.10
really	20	0.10
contents	19	0.10
different	17	0.09
songs	16	0.08
effectively	16	0.08
generally	16	0.08
only	16	0.08
vocabulary	16	0.08

Word	*Frequency*	*Weighted percentage (%)*
activities	15	0.08
knowledge	15	0.08
interference	15	0.08
teachers	15	0.08
course	14	0.07
student	13	0.07

Source: Authors' elaboration using NVivo 12.

Table 2 shows the frequency of keywords used in the interviews. The NVivo 12 software was used to collect the most frequently used words by the interviewed teachers. The five most frequent words were students (*n* = 95), strategies (*n* = 42), learning (*n* = 37), grammar (*n* = 29) and translation (*n* = 23). The repetition of these words is due to the importance given to student role by the interviewees, whose grammar learning strategies are part of the translation students' training.

Figure 4 *Nodes clustered by coding similarity.*



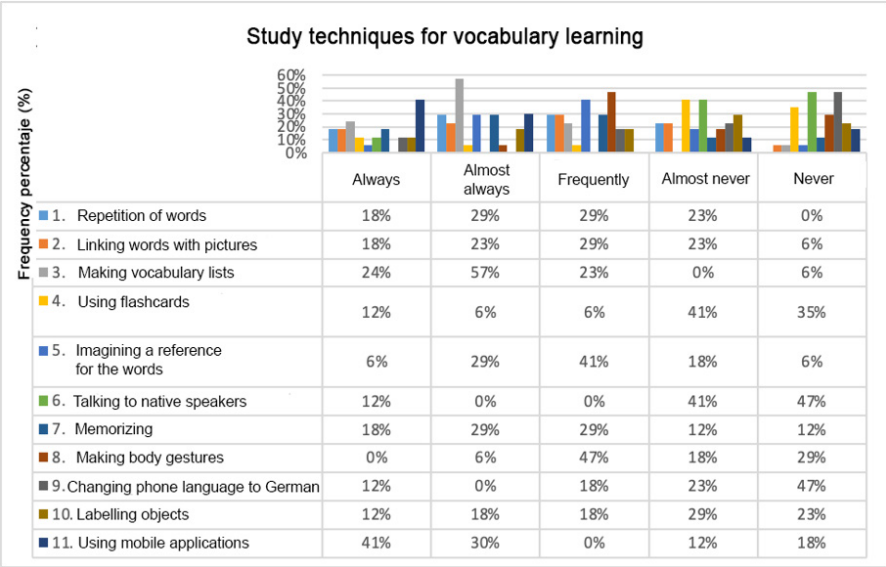
Source: Created by the authors using NVivo 12.

Figure 4 shows the dendrogram for which clustering by coding similarity has been used to visualise patterns within the data. Cluster analysis was done using NVivo 12 software based on Jaccard's similarity coefficient. A total of 14 nodes have been selected for their importance in relation to this research topic. The figure has two levels; the first groups the teaching of grammar and self-learning, which may be explained by the fact that teachers encourage students to study the German language system on their own in their grammar classes, which affects the importance given by the three interviewed teachers to the SLA process.

Survey results: quantitative analysis

The results of the questionnaire answered by 17 students from the analysed course are presented below.

Figure 5 *Frequency percentage of study techniques used for vocabulary learning.*



	Always	Almost always	Frequently	Almost never	Never
1. Repetition of words	18%	29%	29%	23%	0%
2. Linking words with pictures	18%	23%	29%	23%	6%
3. Making vocabulary lists	24%	57%	23%	0%	6%
4. Using flashcards	12%	6%	6%	41%	35%
5. Imagining a reference for the words	6%	29%	41%	18%	6%
6. Talking to native speakers	12%	0%	0%	41%	47%
7. Memorizing	18%	29%	29%	12%	12%
8. Making body gestures	0%	6%	47%	18%	29%
9. Changing phone language to German	12%	0%	18%	23%	47%
10. Labelling objects	12%	18%	18%	29%	23%
11. Using mobile applications	41%	30%	0%	12%	18%

Source: Created by the authors from the study data.

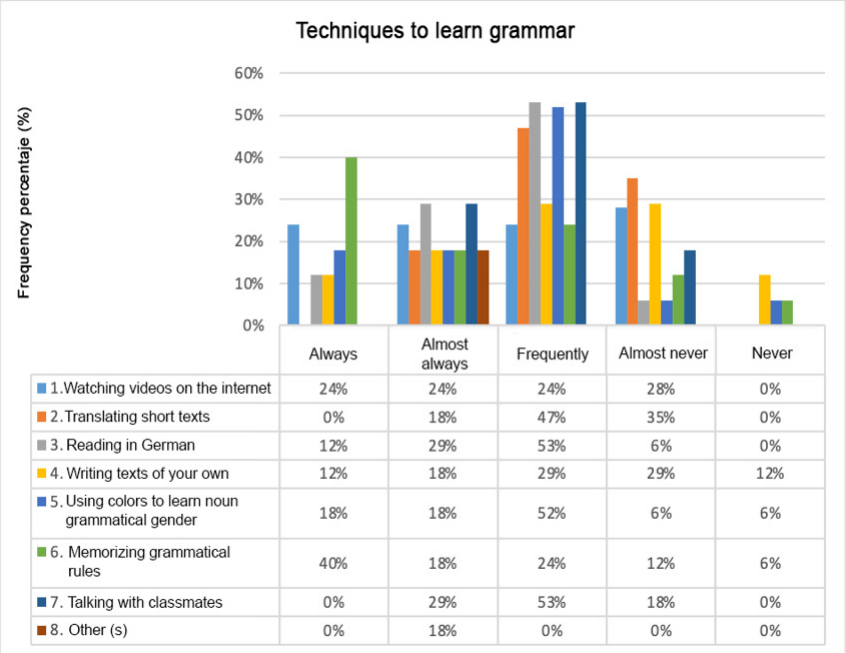
Figure 5 shows the frequency percentage of vocabulary learning techniques application. The most frequently (*always*) used technique, with 41%, is the use of mobile applications. For the *almost always* category, 57% of the students reported making vocabulary lists, with a higher percentage than the previous technique. The analysis indicates that 47% of the students frequently perform body gestures. The techniques with the highest percentage in the almost never category are using flashcards and speaking with native speakers, both with 41%. The techniques with the highest percentage in the *never* category are talking to native speakers and changing the phone language to German (47% each). This section had a field for students to include their own used study techniques. A total of 47% use the platform LEO and 18% use the web application Duolingo to learn German vocabulary.

Figure 6 shows the frequency percentage of study techniques used for grammar learning. The study technique with the highest percentage in *always*, with 40%, is memorising grammatical rules. Moreover, the techniques with the highest percentage in the *almost always* category are reading German content and talking to classmates, both with 29%.

In addition, the techniques with the highest frequency percentage are found in the *frequently* category. The techniques of reading German content and talking to classmates appear again here, with 53% each. Using colours to highlight has 52% in the *frequently* category. Lastly, translation of short texts has 0% in the *always* category, and 47% in the *frequently* category. Additionally, 18% indicate that they use *almost always* a technique not mentioned in the survey. This technique is listening to music.

Figure 7 shows the frequency percentage of used actions to study German. Six study techniques were presented, each of which represents a learning strategy (cognitive, affective, social, memory, compensation, and metacognitive). There is a similarity in the frequency percentage of the most used techniques. Venting to friends after a bad grade (affective technique) and memorising grammar rules (memory technique) scored 34% in the *always* category. Compensating with gestures when there is an unknown word (compensation technique) has the highest frequency percentage in the *almost always* category. Studying the German book (cognitive technique), despite not exhibiting the highest frequency of use, is the second most frequently used technique in the always (24%) and *almost always* (34%) *categories. Notably, engaging* in a German-speaking meeting (social technique) is *never* used by 76% of the students.

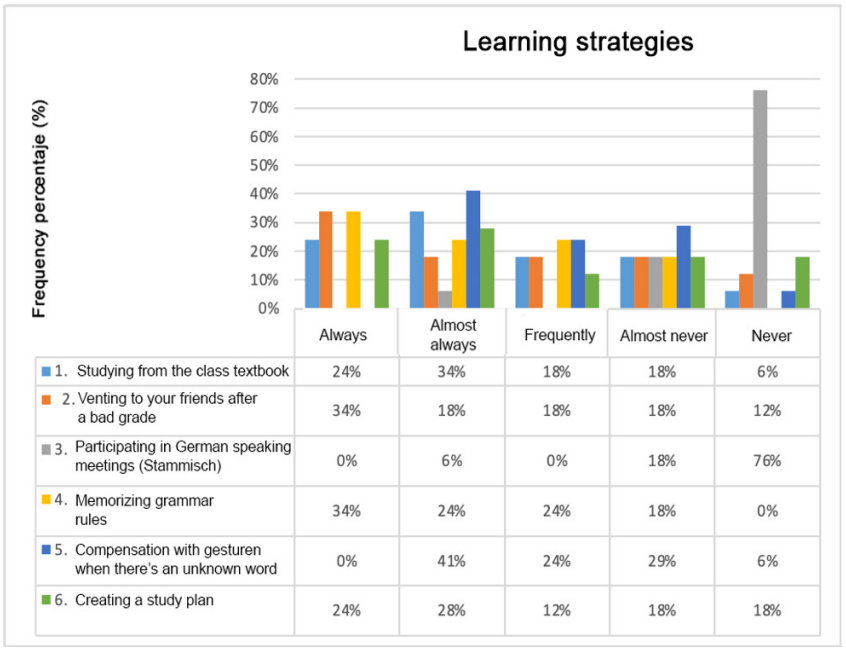
Figure 6 *Frequency percentage of study techniques used for grammar learning.*



	Always	Almost always	Frequently	Almost never	Never
1. Watching videos on the internet	24%	24%	24%	28%	0%
2. Translating short texts	0%	18%	47%	35%	0%
3. Reading in German	12%	29%	53%	6%	0%
4. Writing texts of your own	12%	18%	29%	29%	12%
5. Using colors to learn noun grammatical gender	18%	18%	52%	6%	6%
6. Memorizing grammatical rules	40%	18%	24%	12%	6%
7. Talking with classmates	0%	29%	53%	18%	0%
8. Other (s)	0%	18%	0%	0%	0%

Source: Created by the authors from the study data.

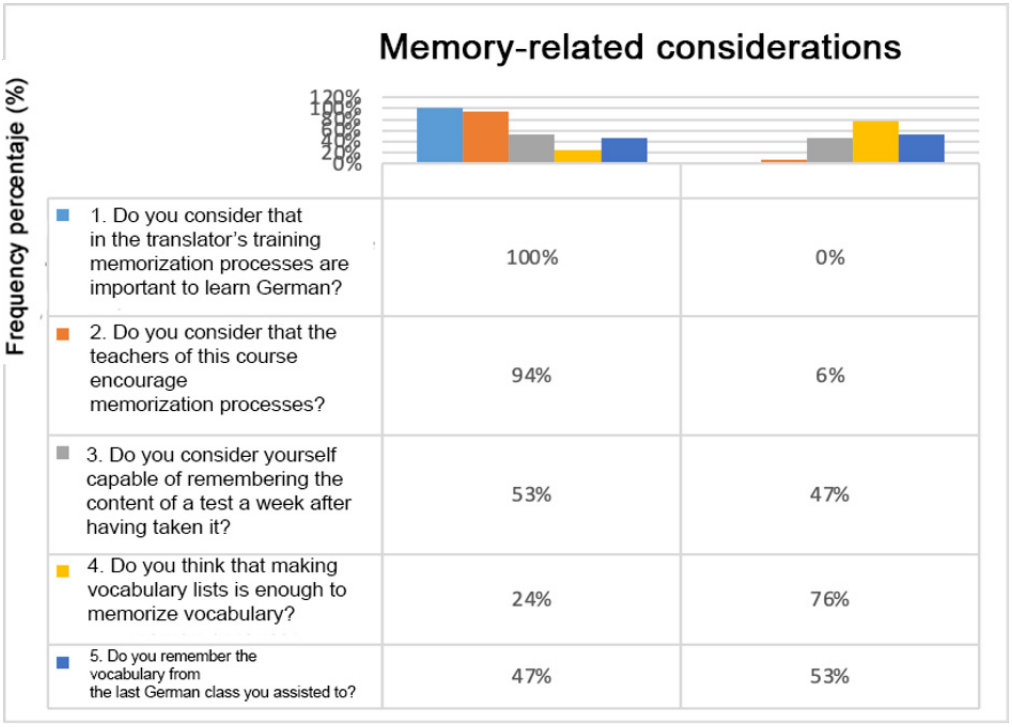
Figure 7 *Frequency percentage of used actions to study per foreign language learning strategy.*



	Always	Almost always	Frequently	Almost never	Never
1. Studying from the class textbook	24%	34%	18%	18%	6%
2. Venting to your friends after a bad grade	34%	18%	18%	18%	12%
3. Participating in German speaking meetings (Stammisch)	0%	6%	0%	18%	76%
4. Memorizing grammar rules	34%	24%	24%	18%	0%
5. Compensation with gesturen when there's an unknown word	0%	41%	24%	29%	6%
6. Creating a study plan	24%	28%	12%	18%	18%

Source: Created by the authors from the study data.

Figure 8 *Frequency percentage of memory-related considerations.*

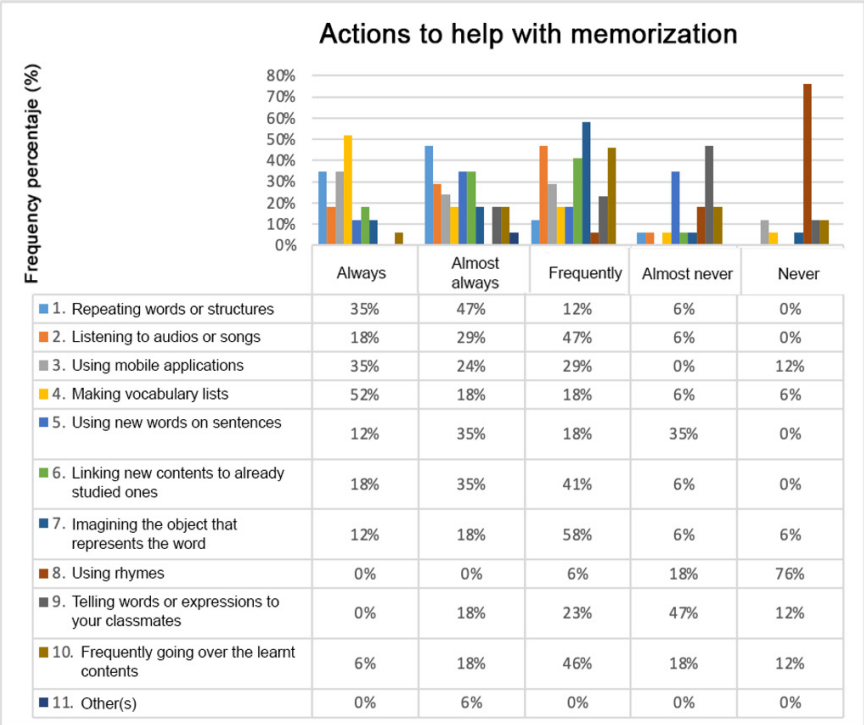


Source: Created by the authors from the study data.

Figure 8 shows the frequency percentage of answers to five yes/no questions regarding memory considerations. All respondents (100%) consider memorisation in German learning to be important for the translator's training process. Most respondents (94%) consider that teachers stimulate the students' memorisation process. These two aspects are mutually consistent, as it can be interpreted that for both students and teachers, memorisation plays an important role in the process of learning German as a foreign language. Additionally, just over half of the students (53%) consider that they can remember the contents of an evaluation one week after taking it, while 47% consider that they are not able to remember them. It is then possible to conclude that half of the students have problems with retaining the learned contents and that they study just to be able to recall the contents for a specific evaluation. Most students (76%) believe that making vocabulary lists for memorisation is not enough; however, 24% believe that it is enough to memorise vocabulary. Just over half (53%) consider that they do not remember the vocabulary of the most recent class even though the same percentage considers that they remember the contents of an evaluation a week after taking it.

Figure 9 shows the frequency percentage of actions used to memorise. Ten actions to memorise in learning German as an L2 are presented along with a field for the interviewees to add an action not mentioned in the questionnaire, if they find it necessary. Just over half of the students (52%) report that they *always* make vocabulary lists for memorisation. By comparison, Figure 5 reports that 24% selected always and 57% selected almost always for vocabulary-list use. Furthermore, 47% of the students use *almost always* the repetition action. Figure 5 indicates that 29% also use this same action *almost always*. Moreover, the action of imagining the object and its referent presents a 58% frequency of use. This technique has a low frequency of use in vocabulary learning (29% in *almost always,* Figure 5). Most respondents (76%) report never using the rhyming technique. One student (6%) proposed a technique not mentioned in the questionnaire, stating that they read news to memorise *almost always.*

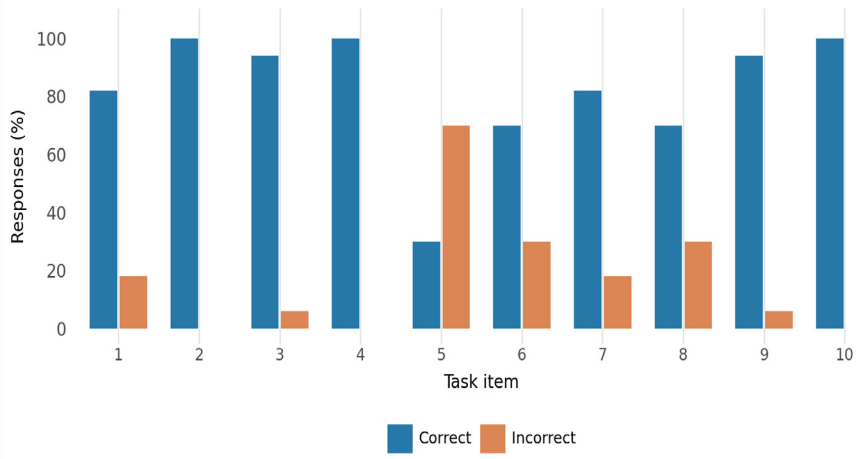
Figure 9 *Frequency percentage of actions used to memorise.*



	Always	Almost always	Frequently	Almost never	Never
1. Repeating words or structures	35%	47%	12%	6%	0%
2. Listening to audios or songs	18%	29%	47%	6%	0%
3. Using mobile applications	35%	24%	29%	0%	12%
4. Making vocabulary lists	52%	18%	18%	6%	6%
5. Using new words on sentences	12%	35%	18%	35%	0%
6. Linking new contents to already studied ones	18%	35%	41%	6%	0%
7. Imagining the object that represents the word	12%	18%	58%	6%	6%
8. Using rhymes	0%	0%	6%	18%	76%
9. Telling words or expressions to your classmates	0%	18%	23%	47%	12%
10. Frequently going over the learnt contents	6%	18%	46%	18%	12%
11. Other(s)	0%	6%	0%	0%	0%

Source: Created by the authors from the study data.

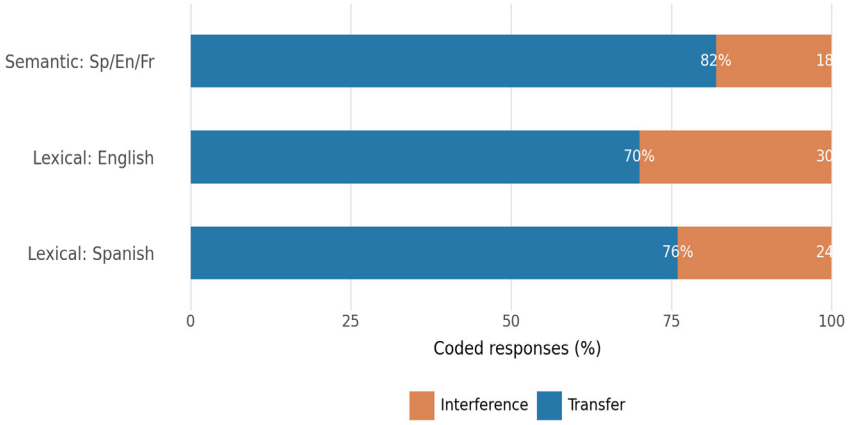
Figure 10 *Percentage of correct and incorrect answers in lexical-semantic tests.*



Source: Created by the authors from the study data.

Figure 10 shows the results of the lexical-semantic test in terms of correct and incorrect answers. All answers show a higher percentage of correct answers, except for answer 5, in which an English interference was detected for the German verb *kosten*, which was answered with *tasten* as interference in 70% of the cases.

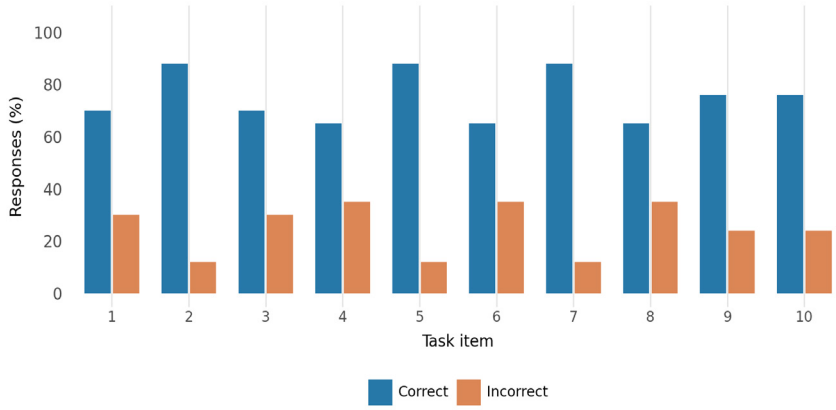
Figure 11 *Percentage of transfers and interferences at the lexical-semantic level.*



Source: Created by the authors from the study data.

Figure 11 illustrates that, at the lexical-semantic level, more transfers than interferences are detected. Among transfers into German, the semantic dimension (Spanish, English and French) is the highest, with 82%, followed by the lexical dimension (Spanish) with 76% and, lastly, the lexical dimension (English), with 70%.

Figure 12 *Percentage of correct and incorrect answers in morphosyntactic tests.*



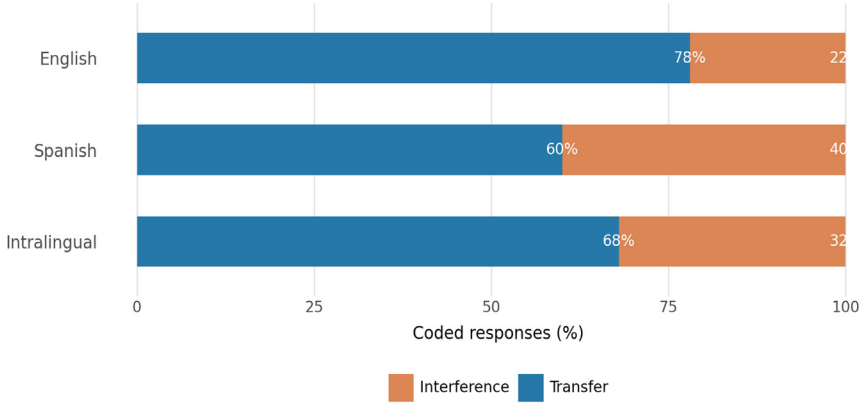
Source: Created by the authors from the study data.

Figure 12 shows the results of the morphosyntactic test for both correct and incorrect answers. All the participants show a higher percentage of correct answers. The maximum percentage of incorrect answers is 35% for questions 4, 6 and 8.

Figure 13 shows that, at the morphosyntactic level, more transfers than interferences are found. The language that shows the highest number of transfers is English (78%), which is consistent with the lexical transfers shown in Figure 11, where it is indicated that English transfers 70% at the lexical level. The intra-lingual dimension shows a transfer rate of 68%, followed by Spanish, with 60%.

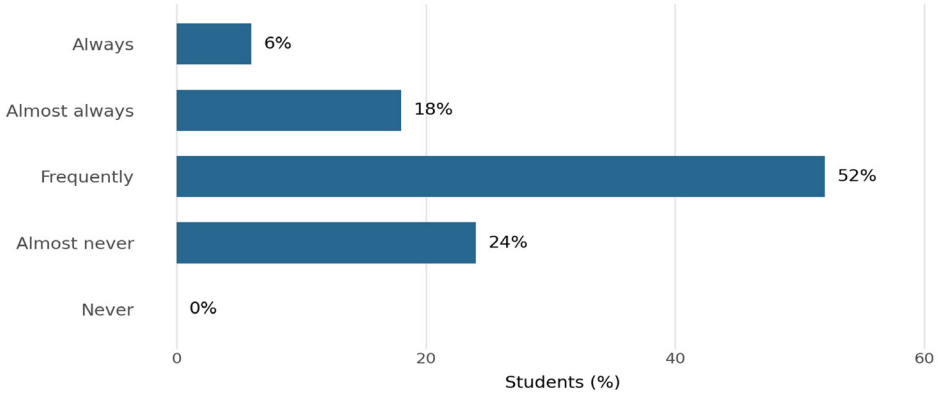
Figure 14 shows the frequency percentage of phonetic interference students make according to their own perception. Accordingly, 6% reported that they *always* perceive interference, 18% *almost always*, 52% *frequently* and 24% *almost never*. All students (100%) state that they perceive some degree of interference at the phonetic level, since no student selected never (0%).

Figure 13 *Percentage of transfers and interferences at the morphosyntactic level.*



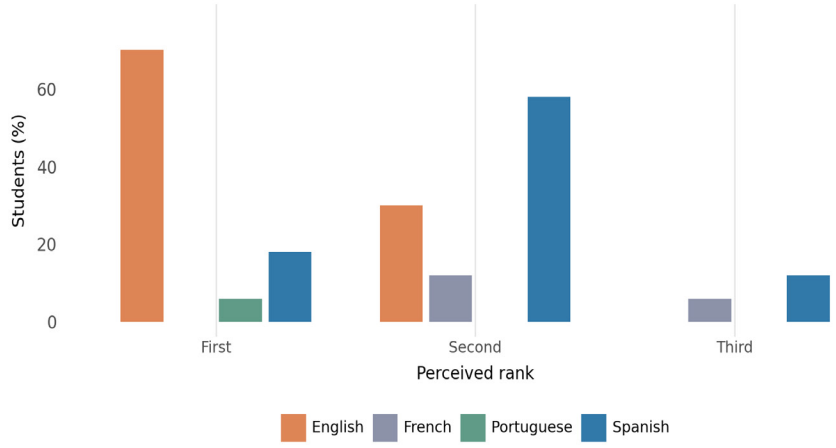
Source: Created by the authors from the study data.

Figure 14 *Frequency percentage of phonetic interference.*



Source: Created by the authors from the study data.

Figure 15 *Percentage of phonetic interference by interfering language.*



Source: Created by the authors from the study data.

Figure 15 shows that, according to the student respondents, English is the language that most interferes with their pronunciation, with 70% as the first choice and 30% as the second choice of interfering language at the phonetic level. The Spanish language is the second choice with the highest frequency, with 58%. It is concluded that learners perceive phonetic interference most frequently from English and then from their native language.

Discussion

The following are the agreements and disagreements between the data from the interviews with three teachers and from the questionnaire administered to 17 students of the analysed course on aspects that play an important role in the present research, namely: 1) Study techniques; 2) Memorisation processes; 3) Language interference.

Study techniques

Both teachers and students agree that the best lexical learning techniques are making lists, using colours, and repetition, which shows that the most used strategies are cognitive and memory-related. However, while teachers suggest using the technique of "labelling objects", 29% of the students indicate that they *almost never* do it and 23% indicate that they never use this technique. These results, which are consistent with those of Aravind and Rajasekaran (2020), suggest that the labelling technique is not widely used by L2 learners.

Memorisation processes

Short-term memory is the one selected by 55% of the students and the only one mentioned by the teachers. Figure 9 shows that 35% always and 47% almost always use the repetition technique for memorising. Teachers and students agree that memorisation is important for learning German. All three teachers mention that memory is essential for learning vocabulary and 100% of the students indicate that they consider memory to be important for their learning process (Figure 8). While the teachers emphasise repetition as a technique for memorising, students indicate that they make vocabulary lists, with 52%. Also, 35% indicate that they use applications on their mobile phones to memorise. This is related to the findings of Morra and Camba (2009) who argue that short-term memory is directly related to SLA, especially lexical learning (lexical mediation), and that repetition is often used to achieve this objective.

Linguistic interference

The two types of interference with the highest percentage of recurrence are interference at the syntactic level from the Spanish language and at the phonetic level from English. In the case of the students, English syntax, Spanish phonetics, and English and Spanish lexis are interferences that occur with an error rate of over 24%. Semantics is a level where teachers do not perceive interference in their students and 18% of students indicate that they perceive it in their production. The syntax of Spanish could, then, interfere with the syntax of German, as there may be parameters in the L2 that are not acquired automatically (Guzmán Naranjo, 2012). On the other hand, the mastery of German phonetics, particularly at this level, would tend to have more interference into German from Spanish and English.

Conclusions

This study provides valuable insights into study techniques, memorisation processes, and linguistic interference in the context of German as an L2. The findings emphasise the need for comprehensive training on diverse learning strategies to overcome students' reliance on limited techniques that stimulate short-term

memory. Moreover, addressing syntactic interference from Spanish and phonetic interference from English is crucial for improving learners' production in German. It is recommended that students receive guidance on a wide range of cognitive and metacognitive strategies to enhance their language acquisition journey. Teachers play a pivotal role in promoting effective study techniques and should focus not only on cognitive approaches but also on developing students' metacognitive skills. By diversifying strategies, addressing interference, and providing effective guidance, educators can support students in achieving greater lexical and grammatical proficiency in German. While these findings provide valuable insights, it is important to acknowledge some limitations of the study. The study's focus on a specific context may not fully capture the complexities of German language learning in other settings. Future research should consider expanding the sample size, employing diverse data collection methods, and exploring alternative study techniques. Moreover, targeted interventions to address specific areas of interference and providing teacher training on metacognitive strategies would further enhance language acquisition. Ongoing assessment and research are necessary to improve lexical and grammatical knowledge in German and support learners in their language learning journey.

Use of Artificial Intelligence

The authors declare that all scientific and intellectual content of this manuscript, including the research design, data collection, analyses, results, interpretations, and conclusions, is entirely their own. Artificial intelligence tools were used exclusively for linguistic proofreading and grammatical editing. All suggested language revisions were reviewed and approved by the authors, who retain full responsibility for the content and integrity of the manuscript.

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