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Cross-Linguistic Influence in Syntax: The Impact of Chinese(L1) on German(L2) Acquisition

Yifei Shi[1, a]

[1]Shanghai World Foreign Language Academy, Shanghai, 200233, China

[a]stella13917619220@gmail.com

Abstract

In China, an increasing number of individuals are taking up German for professional and educational purposes. This trend renders the cross-cultural influences (CLI) within Chinese-German bilingual acquisition particularly noteworthy. This paper primarily examines the CLI exerted by the native language on Chinese-speaking learners during German output, alongside the potential cognitive factors underlying such effects. In German writing tasks, Chinese students frequently encounter issues such as incorrect word order, run-on sentences, and missing sentence components. In spoken German, common problems include grammatical errors, incorrect preposition usage, and the omission of articles and conjunctions. Three models may explain these CLI: Competition Theory, the Declarative/Procedural Model, and Cognitive Load Theory. Ultimately, all three models indicate that CLI stems from learners' difficulty in switching between two linguistically distant systems. Finally, this paper concludes that research should focus on developing more effective language teaching methods enabling learners to study languages outside their native linguistic environment, which may potentially mitigate such negative cross-linguistic interference.

Keywords

Cross-linguistic influence, Syntax, Chinese-German bilingual, Cognitive mechanism.

1. Introduction

Cross-linguistic influence (CLI) is typically defined as the influence that knowledge of one language has on an individual's learning or use of another language [1]. Research on cross-linguistic influence (CLI) reveals how an individual's native language shapes the cognitive processes involved in learning and using a new language [2]. This understanding helps educators develop more effective teaching strategies by recognizing potential challenges and building on learners' existing linguistic strengths [3]. According to Bialystok et al., more than half of the world's population is bilingual, making research on cross-linguistic influence particularly important [4].

Cross-linguistic influence manifests itself in various areas of language, such as phonology and vocabulary. However, it is particularly evident in the area of syntax, as syntactic structures are shaped by cognitive patterns deeply embedded in the native language [5]. Syntax refers to the grammatical arrangement of words in a sentence [6]. From a cognitive perspective, syntax involves complex mental processes, such as working memory, attention control, and rule-based reasoning [7][8]. Learners must not only internalize abstract syntactic structures but also apply them dynamically and accurately in communication. Booth et al. have concluded that, when there are significant differences between the syntactic rules of the first language (L1) and the second language (L2), these requirements become more stringent, thereby increasing the likelihood of cross-linguistic influence and structural interference [9].

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While current research focuses more on the influence between Indo-European languages, such as German and English [10], in the field of cross-language influence between Chinese and other Indo-European languages, only Chinese-English bilingual studies have received considerable attention [11]. This may stem from the significant differences between Chinese and most European languages. This paper chooses to study the cross-linguistic influence of the Chinese-German language pair because these two languages are typologically very different. Chinese is an analytic language with a subject-prominent structure, flexible word order, and relatively few inflectional changes [12][13], while German is a synthetic language with a subject-focused structure, featuring abundant inflectional changes and relatively strict syntactic rules [14]. These stark contrasts create ample room for research on cross-linguistic influences. In addition, more and more Chinese people are beginning to learn less common languages [15], especially German, for purposes such as travel, study, and work. Thus, language education and cross-language cognition are increasingly becoming important areas of research.

2. Research Questions & Hypothesis

Based on the above background, this paper raises the following research questions:

Do Chinese (L1) syntactic rules influence learners' German (L2) output?

If so,

a. How does Chinese (L1) influence manifest in German (L2) output?

b. Why does the influence between L1 and L2 occur?

This paper argues that Chinese can influence the learning of German in a negative way. Due to differences in language type between Chinese and German (i.e., Chinese is an analytic language, while German is a synthetic language), the habits and rules of one's native language may dominate the mind. Therefore, it can be assumed that Chinese may inhibit or overshadow the learning of German, especially in the early stages of learning.

To illustrate this well, this literature review will summarize and discuss two aspects: (1) the syntactic influence of Chinese on German in the process of writing and speaking, and (2) the psychological mechanisms that cause this cross-language influence.

3. The Influences of the Syntactic Processing between Chinese (L1) and German (L2)

The influence of Chinese on German syntactic structure has been demonstrated in numerous studies, all of which indicate a negative impact, i.e., leading to errors in German syntactic usage.

In the field of German writing research, Yang and Fan propose that German distinguishes subjects and objects using cases, while Chinese does not have the concept of “cases.” People distinguish subjects and objects through word order. As such, Chinese speakers may find it relatively difficult to understand cases and may need to spend time memorizing and organizing them. Additionally, verbs and prepositions in German often govern objects with fixed cases, such as the dative/accusative cases. Chinese verbs do not necessarily govern objects or prepositional objects. Therefore, it is clear that if Chinese speakers directly apply Chinese logic to German writing, it may lead to common errors such as missing objects/prepositional objects, using the wrong case, or simply ignoring cases. Furthermore, Yang & Fan emphasize that German usage is influenced by Chinese word order. In German, verbs are typically placed in the second position or at the end of a sentence (in subordinate clauses); however, in Chinese, verbs are generally placed immediately after the subject [16]. In summary, translating Chinese word-for-word into German may result in verbs being flexibly placed within the sentence according to Chinese word order rather than occupying a fixed position.

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Besides, Ma summarized some problems in German output caused by Chinese as a native language from the writing of Chinese university students majoring in German. This study found, as did Yang and Fan, that Chinese students often make word order errors in German writing, specifically in the placement of verbs, which proves the generalizability of this influence. the study also found that sentence component omission is a common problem in the corpus. In Chinese, the predicate can take the form of a verb, noun, or adjective, while German is primarily composed of verbs. This is because the Chinese predicate does not carry temporal properties. Therefore, these differences in language usage rules may lead students learning German as a second language to omit key predicates, i.e., verbs, in their writing. Additionally, German clauses must include a subject, whereas Chinese clauses do not necessarily require a subject, as the subject can be inferred from the context. These differences in clause structure also result in students frequently omitting the subject of clauses in their writing. Thus, this paper can infer that certain elements and sentence structure usage rules and habits in the native language (e.g., Chinese clauses can be grammatically correct with or without a subject) are largely carried over into German by learners, leading to missing sentence components. Chinese writing often features “Chinese flowing sentences,” such as using commas to connect multiple main clauses or placing subordinate clauses and main clauses side by side [16]. These structures are not accepted in German syntax but can appear in Chinese writing. Research suggests this stems from Chinese prioritizing sentence meaning over logical structure, a phenomenon evident in many Chinese proverbs. Therefore, this inertia influences Chinese learners of German to frequently use commas excessively, lack conjunctions to connect sentences, and make errors in subordinate clause structures [17]. It is worth noting that the study also examined the influence of English syntactic structures on German output. Compared to Chinese, English has fewer negative influences, possibly due to similarities in certain aspects of Indo-European grammar. This also highlights the importance and irreplaceability of studying cross-linguistic influences between Asian and European language families.

Last but not least, Si stated that Chinese not only allows the omission of the subject in clauses but sometimes also omits the object. Specifically, when the context has already discussed the object or it can be inferred from the context, the object can be omitted. In German, however, the completeness of the sentence is crucial. Accordingly, if German learners replicate Chinese logic and rules when writing German texts, they are likely to omit the subject or object components of sentences. Additionally, the study highlights some important concepts in German: the infinitive structure and verb-second order, which have no direct counterparts in Chinese syntax. This makes it challenging for learners to master these concepts (such as their usage conditions and positions), leading to frequent misuse or even omission [18].

In summary, two of the three studies reviewed in this paper were conducted within the past five years, demonstrating their strong timeliness and ensuring the advanced level of university language instruction, thereby avoiding overestimation or underestimation of cross-linguistic influences between the two languages due to limitations in teaching standards. Additionally, the three studies were conducted in different regions, schools, and time periods, and their results overlap and mutually reinforce each other, confirming the reliability and universality of the conclusions.

On the other hand, He investigated the influence of Chinese syntax on German spoken language. By analyzing the interpretation recordings of Chinese university students majoring in German, the study found that the most common phenomenon in interpretation content was the mixed use of tenses, primarily between the past tense, present perfect tense, and present tense in German. This may be attributed to a significant feature of Chinese verbs—the absence of tense forms, which prevents inflectional changes. This study argues that this feature leads learners to subconsciously lack an understanding of German verb conjugation, particularly in tasks involving reaction time, resulting in the mixed use of various tenses; similarly, errors in

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preposition usage are also common. In Chinese, a single preposition often has multiple meanings and usage ranges, whereas in German, different situations require different prepositions, with more fixed pairings. Therefore, directly translating prepositions from Chinese without considering the requirements of German language norms is likely to result in errors. Additionally, students often omit articles when speaking German. In Chinese, articles are not required for nouns that are not specifically defined, but in German, articles must be used with singular countable nouns. When speaking German, learners sometimes adopt Chinese thinking patterns and forget to use articles. Additionally, the gender of nouns in German (masculine, feminine, or neuter) adds pressure for Chinese learners when using articles. The study also mentioned that Chinese learners lack variety in their use of conjunctions in German oral communication. According to Chinese grammar rules, sentences can be understood through context even without conjunctions. In contrast, in German, conjunctions must be used to clearly indicate the logical relationships between sentences [19]. As a result, many students exhibit a tendency to speak in a rambling manner when speaking German. Some German learners overuse “und” (equivalent to ‘and’ in English) to clarify logical relationships, but “und” itself cannot convey many causal, conditional, or transitional relationships in German.

To sum up, the issues learners encounter in spoken language differ from those in writing. This paper suggests that this may stem from the differences between the two modes of output. Learners have more time to react and think in writing than in speaking, so mistakes in oral exams tend to be minor details. The reason is often that the corresponding grammatical rules are absent in Chinese, leading learners to unconsciously follow Chinese rules. In writing, however, these issues can generally be corrected after careful consideration.

4. Cognitive Mechanisms that Causes the Cross-Linguistic Influence on the Use of Syntactic Structures

After addressing the specific effects of Chinese native language on German output syntax, this paper aims to further explore the specific cognitive mechanisms underlying this cross-linguistic influence. This study will explain the formation of cross-language effects through three models.

Tokowicz & MacWhinney proposed the competition theory regarding the influence of the native language on second language acquisition. When conflicts arise between the structures of the first and second languages, the native language is more likely to dominate the processes of grammatical generation and comprehension, preventing learners from fluently activating or employing target language structures. However, for structures that have no complete equivalent in the native language, learners can actually establish new systems more rapidly [20]. This theory aligns well with Sino-German bilingual acquisition. As languages belonging to different linguistic families, Chinese and German share many similar yet distinct rules and structures. Consequently, when producing German output, learners are prone to the influence of Chinese syntactic structures, resulting in sentences with disordered word order or missing structural elements.

According to Ullman, second language learners rely more heavily on declarative memory during the early stages of second language acquisition because declarative memory supports rapid learning and the storage of explicit knowledge (grammar rules). In later stages of language learning, learners gradually shift toward utilizing procedural memory. Therefore, the native language may interfere with second language learning because the automatic patterns achieved through procedural memory take precedence over declarative memory [21]. In the initial stages of German learning, learners may rely more heavily on declarative memory. Even if they can memorize syntactic rules, their ability to output sentences is constrained by the automation of procedural memory.

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Prema Chandrika & Ambedkar further elaborated on cognitive load theory. They noted that each individual possesses a finite working memory capacity. When second language learners undertake high cognitive load tasks—such as immediate writing or speaking—they consume more working memory. When working memory capacity is insufficient, certain syntactic rules and vocabulary from the native language are activated and relied upon in speaking or writing to reduce cognitive load (e.g., organizing L2 sentences using native language word order structures), as native language processing is automated and consumes fewer cognitive resources [22]. During German output, Chinese native speakers may encounter significant difficulties in processing grammar and structure due to the substantial formal differences between the two languages. This can lead to cognitive overload, causing confusion in structural syntax and other areas.

Overall, these cognitive theories related to second language acquisition explain from different perspectives why L1 Chinese exerts a negative influence on German output. This paper argues that all three models demonstrate cross-linguistic interference stemming from the non-interoperability between two distinct language families. This prevents learners from transferring their native language's linguistic systems and memory structures to the new language.

5. Conclusion

In summary, native Chinese speakers learning German may encounter significant challenges in both producing and acquiring the language. Errors stemming from native syntactic patterns are common, such as missing sentence components, incorrect word order, misused prepositions or tenses, and rambling speech. Spoken language tends to reveal unconscious errors more readily than written tests, particularly in tense and preposition usage, as these mistakes can often be detected and corrected. The primary cause of this cross-linguistic interference lies in the mother tongue serving as the most familiar language, having established an automated system within the brain. This system tends to supplant and influence the output of the acquired language, substituting it to conserve cognitive effort. These findings suggest that language educators should focus on helping students learn a foreign language outside the context of their native language.

Future studies should further investigate which teaching methods are most effective in helping students learn a language efficiently while minimizing interference from their native language. Additionally, most current research focuses on adults aged 20–30; future studies should also pay more attention to the second and third language acquisition of minors, as people are now learning foreign languages at increasingly younger ages.

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