

Revisiting Native Grammar Through L2 Theories: Knowledge And Processing of Null and Overt Subject Pronouns in Turkish

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Abstract

This study investigates the interpretative and processing mechanisms of null and overt subject pronouns at the syntax-discourse interface among native Turkish speakers. The research focuses on whether challenges in L2 acquisition of subject pronoun distribution are also observed in the properties of native grammars, guided by the Interface Hypothesis (IH) and the Pragmatic Principles Violation Hypothesis (PPVH). Results from the acceptability judgement task indicate that native Turkish speakers do not uniformly interpret null and overt subjects; overt subjects are often pragmatically overused in contexts requiring topic continuity. However, the findings from the self-paced reading task showed no significant processing differences between felicitous and infelicitous uses of subject pronouns, suggesting that native speakers might not actively penalize grammatical infelicities during real-time processing. These results suggest that issues traditionally associated with L2 acquisition might also be intrinsic to native language behavior. The study calls for further cross-linguistic research to determine if these findings are specific to Turkish or part of a broader pattern in null subject languages.

D2 Teorileriyle Anadili Dilbilgisini Yeniden İncelemek: Türkçede Boş ve Açık Özne Adıların Bilgisi ve İşlenmesi

Öz
Bu çalışma, anadili Türkçe konuşucular arasında boş ve açık özne adılarının sözdizim-söylem arakesitinde nasıl yorumlandığını ve işlendiğini araştırmaktadır. Araştırma, özne adılarının dağılımına ilişkin D2 edinimi problemlerinin anadilinde de gözlemlenip gözlemlenmediğini Arakesit Varsayımı ve Pragmatik İlkeler İhlali Varsayımı çerçevesinde tartışmaktadır. Kabul edilebilirlik yargı testinden elde edilen sonuçlar, anadili Türkçe konuşucularının boş ve açık özneleri benzer bir şekilde yorumlamadığını göstermektedir; açık özneler, konu devamlılığı gerektiren bağlamlarda gereğinden fazla kullanılmaktadır. Ancak, öz-denetimli okuma testinden elde edilen sonuçlar, özne adılarının uygun ve uygun olmayan kullanımları arasında anlamlı bir işleme farkı olmadığını bulgulamıştır, bu da anadili konuşucularının gerçek-zamanlı dilsel veri işleme sırasında dilbilgisel hataları farklı işlemediklerini göstermektedir. Bu sonuçlar, geleneksel olarak D2 edinimiyle ilişkilendirilen sorunların anadili davranışına da özgü olabileceğini öne sürmektedir. Çalışma, bu bulguların Türkçeye özgü mü yoksa boş özne dillerinde daha geniş bir örüntünün parçası mı olduğunu belirlemek için daha fazla dilbilimsel araştırmaya ihtiyaç duyulduğunu vurgulamaktadır.

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In recent years, there has been a significant surge in research focusing on how language users engage with the multifaceted structures of language. This body of work known as the interfaces are critical mappings where various components of language converge and intertwine, such as the syntax-discourse interface (Jackendoff, 2002), which explores the relationship between syntactic structures and the way information is processed and understood within discourse (White, 2011).

A key aspect of the syntax-discourse interface is the distribution of null and overt subjects in null subject languages. Research in this area has demonstrated the intricate connection between syntactic configurations of subjects and discourse-level factors like topic continuity and shift. The decision to use null or overt subjects in such languages is often governed by the discourse context, making it a focal point for studies at this interface.

The investigation of null and overt subject distribution has been particularly robust within the field of second language (L2) acquisition. This line of research has been instrumental in understanding how L2 learners comprehend subjects in a non-native context. Recent findings indicate that L2 acquisition of subject distribution at the syntax-discourse interface poses significant challenges, even for near-native L2 learners of null subject languages (e.g., Sorace & Filiaci, 2006; Tsimpli & Sorace, 2006). To address these learnability issues, theoretical frameworks such as the Interface Hypothesis (IH; Sorace & Serratrice, 2009; Sorace, 2011) and the Pragmatic Principles Violation Hypothesis (PPVH; Lozano, 2016) have been proposed. These frameworks suggest that there are inherent deficits in L2 acquisition that impact how learners process and interpret null and overt subjects.

The present study hypothesizes that the challenges posed by pragmatic constraints in L2 acquisition may also manifest in native language use. Research that includes native speakers as control groups has revealed important implications for the broader field of native grammar, as it suggests that native grammars might exhibit deviations from expected patterns concerning the distribution of null and overt subjects (e.g., Alonso-Ovalle et al., 2002; Engelhardt et al., 2006; Jegerski et al., 2011; Keating et al., 2011). Accordingly, this study aims to investigate whether and how native speakers display these grammatical patterns.

Grounded in L2-oriented theories, the study focuses on the knowledge and processing of subject pronouns at the syntax-discourse interface among native Turkish speakers. Employing an acceptability judgment task, the study explores the interpretation of discourse-constrained distribution of subject pronouns among native speakers of Turkish. Additionally, through self-paced reading task, the research aims to observe real-time processing of subject pronouns, thus providing a more accurate depiction of the cognitive mechanisms involved. This integrated approach allows for a comprehensive examination of both the metalinguistic knowledge and real-time processing of subject pronouns.

Recent version of the IH links deficits in the distribution of null and overt subjects to the problems in processing information more than the representation of that knowledge. Therefore, the integration of both offline and online tasks in this study is poised to provide comprehensive insights into the complexities of knowledge and processing at the syntax-discourse interface, specifically within the context of native grammar. Offline method allows for understanding how language users interpret language in a more reflective manner and revealing how native speakers perceive and judge the acceptability of various syntactic constructions involving subjects by using their metalinguistic knowledge. On the other hand, employing an online method allows for the observation of real-time processing that individuals use when encountering null and overt subjects in their native language.

The organization of this study is structured to explore the subject pronoun distribution in Turkish. Initially, the study outlines the fundamental aspects of subject distribution in Turkish. Following this, it introduces the guiding L2 theoretical frameworks, namely the IH and PPVH, providing a foundation for the investigation. The subsequent sections review the pertinent literature, highlighting crucial findings and ongoing debates related to the findings of these L2 hypotheses with regard to native speakers. The methodology section details the research design and data collection procedures used. This leads into the results section, where data interpretations are presented, followed by a discussion that ties the findings back to the theoretical frameworks and explores their broader implications.

Subject Distribution in Turkish

The study of null and overt subjects has been a significant area in generative grammar, particularly within the investigation of the null subject parameter. Turkish is a null subject language, allowing the use of unexpressed subjects in sentences. The null pronominal subject in Turkish, termed *pro*, is claimed to be licensed by the AGR (Agreement) functional category (Özsoy, 1987). Its reference is discernible from the agreement markers on the verb and syntactically occupies the same position as overt pronouns or lexical subjects. For example, in the sentence below, *pro* occupies the same syntactic position as overt subjects (*öğretmen* ‘teacher’ and *o* ‘s/he’).

- (1) Öğretmen / o / *pro* gel-di-Ø
 teacher / s/he / *pro* come-past-3SG
 ‘The teacher / s/he / Ø came.’

The choice between null and overt subjects in Turkish is determined by discursive constraints, particularly influenced by the information structure of the sentence. Previous studies (Enç, 1986; Erguvanlı-Taylan, 1986; Özsoy, 1987; Turan, 1995) have noted that discursive components like topic continuity and topic shift play a crucial role in this distribution. For instance, null subjects typically indicate topic continuity, as shown in (2), where the use of an overt subject in a context of topic continuity - when not used to refer to another person in the context - would result in redundancy.²

- (2) Ali sınav-a çok çalış-tı-Ø ama #Ali / #o / *pro* başarısız ol-du-Ø
 Ali exam-DAT hard study-PAST-3SG but Ali / he / *pro* fail-PAST-3SG
 ‘Ali studied hard for the exam but #Ali / #he / Ø failed.’

Conversely, overt subjects in Turkish signify topic shift or introduce contrastive focus. (3) illustrates the necessity of an overt subject in a topic shift context. Similarly, (4) demonstrates the use of overt subjects in a contrastive focus context, where they are essential for clarity and emphasis.

- (3) Bugün okul-a git-me-di-m,
 today school-DAT go-NEG-PAST-1SG
 Ali / o / #*pro* hasta ol-duğ-um-u düşün-üyor-Ø
 Ali / he / *pro* sick be-NOM-1SG-ACC think-PROG-3SG
 ‘I didn’t go to school today, Ali/he/ #Ø thinks that I am sick.’
- (4) Ben / #*pro* voleybol oyna-ma-(y)ı sev-iyor-um ancak

² In the study, redundant and unacceptable constructions are systematically indicated by the notation “#”, signifying that the linguistic structure is deemed discursively unacceptable.

I *pro* volleyball play-NOM-ACC like-PROG-1SG but
 Ali / o / #*pro* futbol oyna-ma-(y)ı sev-iyor-Ø
 Ali he *pro* football play-NOM-ACC like-PROG-3SG
 ‘I like playing volleyball, but Ali/he/ #Ø likes playing football.’

The use of null and overt subjects in Turkish is profoundly influenced by discursive constraints and is intricately regulated by the syntax-discourse interface. Null subjects typically indicate topic continuity, while overt subjects are utilized in contexts where there is a shift in topic or a contrastive focus to avoid ambiguity. Notably, the introduction of a new referent typically necessitates the use of an overt subject to ensure clarity and prevent ambiguity.

The Avoid Pronoun Principle (APP, Chomsky, 1981) provides a theoretical framework for analyzing the selection process between null and overt subjects in null subject languages such as Turkish. The APP effectively accounts for the distribution of null and overt subjects in Turkish, where null subjects are preferred in contexts of topic continuity. However, in cases of topic shift or contrastive focus, as illustrated in examples (3) and (4), the use of null subjects becomes implausible. These contexts necessitate overt subjects to explicitly signal pragmatic information, such as a change in topic or the introduction of a contrast.

Experimental studies also highlight the discourse-dependent nature of null and overt subject distribution in Turkish. For instance, Azar and Özyürek (2015) explored how native Turkish speakers manage discourse by tracking references through both speech and gesture. Their research focused on how speakers introduce and maintain subject referents in narratives, with particular attention to the use of various linguistic forms, including noun phrases, pronouns, and null forms, alongside their corresponding gestures. Regarding the distribution of null and overt subjects, the study revealed that speakers predominantly used null subjects to maintain reference to an existing subject, while the third-person overt pronoun *o* was primarily employed to reintroduce subject referents, often for emphasis.

In summary, the use of null and overt subjects in Turkish is deeply influenced by discursive constraints. Null subjects are preferred to indicate topic continuity, while overt subjects are used in contexts of topic shift and contrastive focus. This distinction, guided by the APP, highlights the discourse-driven nature of subject selection and the intricate interplay at the syntax-discourse interface in Turkish.

L2 Theoretical Insights on Subject Distribution

The field of L2 acquisition research has identified various difficulties encountered by L2 speakers, especially in their application of subject pronouns. This area has been extensively studied, revealing that L2 speakers frequently misuse overt subject pronouns, a phenomenon that has generated multiple hypotheses and theoretical frameworks to explain its underlying causes.

Sorace & Filiaci (2006) conducted a pioneering study on near-native L2 Italian speakers with English as their first language. They observed that these speakers frequently selected overt subjects inappropriately when compared to native Italian speakers. This observation led to the formulation of the Interface Hypothesis (IH). The hypothesis posits that L2 speakers find the syntax-discourse interface—where language use is externally conditioned by contextual information—particularly challenging. The hypothesis was later refined by Sorace (2011), linking these difficulties to processing challenges at this interface and highlighting the additional cognitive load borne by L2 speakers.

Building on these insights, Lozano (2016) examined a corpus of native English speakers learning Spanish as their L2. The study identified specific patterns in how these L2 speakers used subjects in various

discourse contexts. For example, in situations signalling topic continuity, L2 speakers tended to overuse overt subjects, thereby violating expected subject distribution norms. However, in scenarios involving a topic shift, where the use of overt subjects was pragmatically necessary, these speakers adjusted their usage accordingly.

These findings prompted Lozano to propose the Pragmatic Principles Violation Hypothesis (PPVH), which draws on Neo-Gricean principles. This hypothesis suggests that L2 speakers systematically fail at the syntax-discourse interface, leading to pragmatic violations that range from mild to severe. In contexts of topic continuity, the unnecessary repetition of overt subjects by L2 speakers constitutes a mild violation of the Informativeness/Economy Principle due to overinformativeness. Conversely, the use of null subjects in contexts requiring a topic shift or contrastive focus results in more significant violations of the Manner/Clarity Principle, introducing ambiguity due to a lack of necessary clarity.

Margaza & Gavarró (2020) further argued that the PPVH predicts a specific direction of deficits, where L2 speakers predominantly overuse overt subjects, but do not similarly overuse null subjects. This suggests that the primary issue at the syntax-discourse interface concerns the redundant use of overt subjects.

This paper argues that deficits at the syntax-discourse interface are not exclusive to L2 grammars but also manifest in native grammars. The study claims that native Turkish speakers, like L2 speakers, tolerate pragmatic violations involving overt subject pronouns in topic continuity contexts and penalize null subject constructions in contexts that involve topic shift or contrastive focus. This suggests that challenges outlined by the L2 theories may reflect intrinsic cognitive difficulties in integrating syntax and discourse, rather than being limited to L2 acquisition. Accordingly, the following section examines L2 studies in relation to native grammars, focusing on the variability observed in native speaker subject distribution, to explore the universality of these deficits in offline and online studies.

Insights from Native Speakers in Studies on L2 Subject Distribution

The investigation into the distribution of null and overt subjects at the syntax-discourse interface, particularly in language processing, has been relatively limited but increasingly significant. Research in this area has primarily focused on the impact of L2 acquisition on subject pronoun usage.

For example, Judy (2015) conducted a significant study on L2 acquisition, incorporating native Spanish speakers as the control group. Employing both offline and online methods, Judy explored how these speakers resolved anaphora with null and overt subject pronouns in contexts of topic maintenance, topic shift, and contrastive focus, with the IH framework. In her offline task, participants were required to evaluate the pragmatic appropriateness of sentences using a Likert Scale. The study highlighted, for instance, a topic-shift context where the use of the overt subject *ella* ‘she’ was necessary for clarity:

- (5) *Context:* Mi hija quiere ser autora y no tiene otros intereses. Yo creo que es mejor tener varios intereses y sugiero otras actividades, pero no importa lo que diga yo.
 ‘My daughter wants to be an author and she has no other interests. I think that it is best to have various interests and I suggest other activities, but it doesn’t matter what I say.’
- a. Finalmente ella escribe cuentos y pasa todo el día en su cuarto.
 - b. #Finalmente *pro* escribe cuentos y pasa todo el día en su cuarto.
- ‘In the end, she writes stories and spends the whole day in her room.’

The findings from the offline study indicated that while native control group infrequently misused subjects in contrastive focus and topic shift contexts, they occasionally accepted redundant overt subjects in

topic continuity contexts. This trend was similarly observed among L2 speakers. In the online method, a self-paced reading task was implemented. However, the results showed no significant processing differences between sentences that were contextually felicitous and those that were non-felicitous among L2 and native speakers, contradicting the expectations set by the IH framework, since native speakers did not penalize infelicities in real-time processing.

Lozano (2018) examined the challenges associated with the syntax-discourse interface, including a control group of adult native Spanish speakers. The findings of the study indicated that the acceptance of null and overt subjects varied depending on the discourse context. In contexts of topic continuity, such as illustrated in example (6), native speakers showed a mild disapproval of overt subjects because the discourse already centred around a specific subject, rendering the use of an overt pronoun redundant.

- (6) El profesor Antonio López trabaja todos los días en la Universidad, por eso los estudiantes dicen que #él / *pro* trabaja mucho.
 ‘Professor Antonio López works every day at the University, which is why the students say that he / *pro* works a lot.’

Conversely, in contexts requiring contrastive focus, as in example (7), native speakers strongly rejected the use of null pronouns. In these scenarios, an overt pronoun is essential for disambiguating the referent.

- (7) Aunque Michael Douglas y Sharon Stone ganan muchos millones al año, él / ella / #*pro* trabaja poco.
 ‘Although Michael Douglas and Sharon Stone earn many millions per year, he / she / #*pro* works little.’

Margaza and Gavarró (2020) extended the investigation of subject distribution by examining various pragmatic contexts, including non-contrastive reference shift, referent continuity/shift, and topic-shift/contrastive focus. The study utilized multiple-choice tasks in which participants evaluated the appropriateness of null or overt subjects within given sentences. For example, in a context requiring a null subject to maintain topic continuity in Greek, as illustrated in example (8), native speakers occasionally deviated from expectations by incorrectly selecting overt subjects.

- (8) Prota i Martha etimazi to fajito ke meta _____ djavazi ja to metaptixiako.
 ‘First, Martha prepares the meal and then _____ studies for her Master’s Degree.’
 Options: (a) Ø (null subject) (b) afti (she)

In contrast, in contexts requiring an overt subject for disambiguation, as illustrated in example (9), native Greek speakers generally demonstrated correct usage.

- (9) An ke i Meri ke o Jorgos pigan sti sxoli, o ipeftinos kathijitis emathe oti _____ den parakoluthise to mathima tis filosofias.
 ‘Although Meri and Jorgos went to the university, the lecturer realized that _____ did not attend the philosophy class.’
 Options: (a) afti (she) (b) Ø (null subject)

On the other hand, native Spanish speakers consistently adhered to the pragmatic constraints of subject distribution across all contexts. This adherence was an unexpected result for the researchers and suggests the need for further exploration in future studies.

Further evidence from L2 acquisition studies, including Jegerski et al. (2011) and Keating et al. (2011), indicates that while native speakers often use overt subjects redundantly in contexts predicted for null subjects, they generally avoid ambiguity, similar to L2 speakers. This suggests that while native speakers frequently demonstrate a preference for overt subjects, even in contexts where null subjects might be expected, they also show a clear tendency to avoid ambiguity.

There are also studies that focus on the distribution of null and overt subjects in L2 Turkish the syntax-discourse interface. For instance, Çınar (2022) conducted two offline experiments to examine how Turkish L2 speakers acquire these pronouns. Using an acceptability judgment task and a question-answer task, the tasks revealed statistically significant differences in how Turkish native speakers process unacceptable null and overt subject constructions. For example, (10) illustrates a context in which the use of an overt subject pronoun is required:

- (10) *Context:* Ahmet ile ben her zaman Ali'nin ödevlerini yapmasına yardımcı oluruz. Dün, Ali yine bizden yardım istedi ancak Ahmet Ali'ye çok işi olduğunu söyledi. Bu yüzden de Ahmet benden yardım istedi.
 'Ahmet and I always help Ali with his homework. Yesterday, Ali asked us for help again but Ahmet told Ali that he had a lot of work. So, Ahmet asked me for help instead'.
 a. #Ahmet'in işi olduğu için *pro* yapmamı istiyor.
 b. Ahmet'in işi olduğu için benim yapmamı istiyor.
 'Since Ahmet has work to do, he wants me to do it'

In contrast, (11) exemplifies a topic continuity context, where the use of a null subject pronoun is required:

- (11) *Context:* Yurtdışı gezisi için arkadaşlarımla havaalanında saat 2'de buluşmaya karar verdik. Onlar tam 2'de gelmişti. Ancak ben trafikten dolayı havaalanına 2.30'da gidebildim ve uçağı son anda yakaladım.
 'We decided to meet at the airport at 2 o'clock with my friends for our trip abroad. They arrived exactly at 2. However, due to traffic, I could only get to the airport at 2:30 and managed to catch the plane at the last moment'.
 a. *pro* Havalanına çok geç gitmeme rağmen *pro* uçağı yakalamayı başardım.
 b. #Ben havaalanına çok geç gitmeme rağmen #ben uçağı yakalamayı başardım.
 'Even though I arrived at the airport very late, I managed to catch the plane'.

Although native speakers encountered unacceptable null and overt subject constructions in (10a) and (11b), the statistical analyses revealed significant differences between their responses. Further analysis revealed that native speakers exhibit a tendency to use redundant subjects, a pattern that aligns with findings from L2 acquisition data.

However, there are studies indicating sensitivity to the distribution of null and overt subjects in native Turkish. For instance, in Gürel (2006), participants were presented with sentences containing pronouns and were asked to select the picture that best matched the meaning of each sentence. This method enabled the evaluation of participants' interpretations of null and overt subject pronouns across various contexts. The findings revealed that the control group of native Turkish speakers demonstrated clear sensitivity to this distribution. Similarly, the data from the L2 group also indicated sensitivity to the distinctions between null and overt subjects.

In another study, Çeltek (2020) investigated specific discourse-pragmatic contexts (e.g., salient referent, switch focus, contrastive focus, pragmatic weight, and epistemic parenthetical) that influence the choice between null and overt first-person subjects in Turkish oral narratives. The findings revealed that the control group of native Turkish speakers demonstrated full sensitivity to the discourse contexts requiring the use of null or overt first-person subjects. Similarly, the L2 group also exhibited sensitivity to these discursive constraints, indicating an alignment with native-like usage in contextually appropriate subject selection.

In summary, research at the syntax-discourse interface reveals a complex and multifaceted picture of null and overt subject interpretation and processing. Native speakers frequently demonstrate a propensity to use overt subjects redundantly, even in contexts where null subjects would be pragmatically appropriate, indicating potential limitations in adhering to syntax-discourse interface constraints. Additionally, language-specific variations (e.g. Spanish vs. Greek) have been shown to significantly influence the distribution of subject pronouns, as highlighted in the findings of Margaza and Gavarró (2020). Furthermore, some studies reported on Turkish have shown sensitivity to null and overt subject distribution, which contrasts with findings in other languages. This calls for a cautious interpretation of the results and highlights the need for further investigation to unravel the complexities of subject use at the syntax-discourse interface.

Aims of the Study

The primary objective of this study is to examine how native Turkish speakers interpret and process the distribution of subject pronouns at the syntax-discourse interface. Specifically, it seeks to determine whether the challenges documented in L2 acquisition are also reflected in native grammars. The latest insights from the IH propose that deficits at the syntax-discourse interface are predominantly related to processing knowledge rather than structural representation. Conversely, the PPVH argues that deficits are most apparent in topic continuity contexts, where overt subjects are redundantly used, violating pragmatic constraints, unlike with ambiguous null subjects. Accordingly, this study seeks to test these hypotheses by assessing subject distribution in both offline and online tasks to compare the representation of target structures with the real-time processing. To test the PPVH, an offline task will be employed to evaluate participants' judgments of subject distribution in different discourse contexts. In contrast, an online real-time processing task will be used to examine how well the predictions of IH align with participants' processing of subject pronouns.

To date, no study has specifically addressed these discursive constraints on subject distribution within native Turkish grammars from the perspectives of both knowledge representation and real-time processing. Previous research focusing on L2 acquisition across different languages suggests that similar violations of subject use observed in L2 settings may also exist in native grammars. This study thus endeavours to ascertain whether such properties at the syntax-discourse interface pose challenges for native Turkish speakers and to identify the particular contexts in which these challenges occur. Given the varied results in existing research and the absence of studies focusing on native Turkish speakers in knowledge representation and processing tasks, this study aims to fill this gap and enrich the field with data from the Turkish linguistic context.

The research questions guiding this study are:

- (i) Does the syntax-discourse interface present challenges to Turkish native speakers regarding the distribution of subject pronouns?
- (ii) If such challenges exist, what are their underlying causes? Are they due to the issues with knowledge representation or real-time processing?

To address these questions, the study utilized two experimental approaches that examine both knowledge representation and real-time processing. The first approach, an offline task, required participants to evaluate the acceptability of sentences featuring null and overt subjects in context. These sentences either adhered to or violated pragmatic constraints on subject distribution. Accordingly, the task assessed how native speakers represent and interpret these structures when not constrained by the demands of real-time processing. The second approach involved an online task, in which reading times were recorded as participants read contextualized sentences containing null and overt subjects.

Together, these experimental approaches are designed to reveal whether there are discernible deficits at the syntax-discourse interface and if such deficits are specific to certain contexts, thereby contributing significantly to the understanding of subject pronoun distribution among native Turkish speakers and challenging L2 accounts of subject distribution.

Method

Participants

The study involved 69 native Turkish speakers, all of whom were undergraduate students at the Istanbul Medeniyet University. These participants were divided into two groups: 35 students completed the offline task (mean age: 23.46; SD = 4.56), while 34 students completed the online task (mean age: 21; SD = 2.36). Ethical approval for this study was granted by the Istanbul Medeniyet University Social and Humanities Ethics Commission under the decision number 2024/1, dated January 23, 2024. Informed consent was obtained from all participants prior to the commencement of the study.

Materials

Experiment 1: Acceptability judgement task

The acceptability judgment task aimed to investigate how native Turkish speakers interpret the distribution of null and overt subject pronouns in context-dependent sentences. The target sentences were categorized as either felicitous, conforming to discourse constraints, or infelicitous, marked by the overuse or underuse of these pronouns. Importantly, all sentences were grammatically correct. Participants were required to explicitly evaluate the acceptability of each sentence in its null and overt forms, including both appropriate uses (aligned with the discourse constraints) and inappropriate uses (violating the discourse requirements). This task was specifically designed to assess participants' offline knowledge of subject pronoun distribution and their sensitivity to discourse constraints, making it suitable for testing the PPVH framework.

The task incorporated first-, second-, and third-person singular pronouns, with no significant differences among these pronouns anticipated.³ The inclusion of various pronoun types aimed to enhance diversity among test items and expose participants to a broad range of sentence structures. To avoid the risk of participants focusing excessively on the target sentences and inferring the study's objectives, each sentence was followed by a yes-no comprehension question. These questions assessed participants' understanding of the context presented in the sentences.

³ The study excluded *kendisi* (self-3SG.POSS) as an overt subject due to its unique pronominal features and discourse functions that diverge from those of standard overt pronouns like *o*. While *kendisi* is grammatically an overt pronoun, its usage introduces complexities that may confound the interpretation of discourse-based constraints (see Çınar, 2023, for further discussions).

The task was designed around two experimental conditions, each reflecting distinct discourse contexts: Topic continuity and contrastive focus. Both conditions utilized similarly structured sentences to enable precise comparisons between the two. Each condition is represented by 8 test items, including both option a and option b for each item. Additionally, 16 filler sentences with varied subject constructions were included to diversify the task and minimize participant bias. The specific characteristics of each condition are outlined as follows:

Topic Continuity: This condition in the study focused on sentences structured to highlight topic continuity. The setup involves a two-sentence context: The initial sentence of the context introduces a subject (DP or *pro*), followed by a second sentence describing the activity of the previously introduced subject. The target sentence within this setup is a compound structure, connected by the conjunction *ancak* ‘but’. The sentence starts with a null subject to reinforce the continuity of the topic. Accordingly, participants in the study were presented with sentences that demonstrated both felicitous and infelicitous uses of pronouns following *ancak*, illustrating the acceptable and redundant use of pronouns. For instance, the felicitous sentence (12a) adhered to discourse constraints by omitting the subject after *ancak*, maintaining topic continuity. In contrast, the infelicitous sentence (12b) redundantly included an overt subject, *ben* ‘I’, after *ancak*, disrupting the continuity.

- (12) *Context:* Üniversitede yüksek lisans öğrencisiyim. Bu hafta, tezime başlamama rağmen çalışmamı genişletmek için ek kaynaklara başvurmayı planlıyorum.
‘I am a master’s student at the university. This week, although I am starting my thesis, I plan to consult additional resources to expand my study.’

Target Sentences:

- a) Tezimi yazmaya başladım ancak çalışmamı genişletmeyi planlıyorum.
b) #Tezimi yazmaya başladım ancak ben çalışmamı genişletmeyi planlıyorum.
‘I have started writing my thesis, but I plan to expand my study.’

Contrastive Focus: The target sentences followed a structure similar to those in topic continuity contexts, beginning by referencing one of the subjects introduced earlier. However, a critical distinction arose with the use of the conjunction *ancak*. After *ancak*, the second subject was explicitly reintroduced, emphasizing the contrast. Participants were presented with sentences demonstrating both felicitous (with overt subject pronoun) and infelicitous (with null subject pronoun) uses of pronouns following *ancak*, illustrating both acceptable and redundant uses of pronouns. For instance, the felicitous sentence (13b) effectively uses the overt subject pronoun *ben* after *ancak* to clearly highlight the contrast between the two subjects, *Pınar* and the speaker. This aligns with the discourse requirements for emphasizing shifts in focus. In contrast, the infelicitous sentence (13a) omits the subject after *ancak*, disrupting the intended contrast and making the sentence less coherent in the given context.

- (13) *Context:* Pınar ve ben bitirme tezlerimiz üzerinde çalışıyoruz. Bu hafta, Pınar tezini yazmaya başlarken ben ise çalışmamı genişletmek için ek kaynak aramaya başladım.
‘Pınar and I are working on our graduation theses. This week, while Pınar started writing her thesis, I began searching for additional resources to expand my study.’

Target Sentences:

- a) #Pınar tezini yazmaya başladı ancak çalışmamı genişletmeyi planlıyorum.
b) Pınar tezini yazmaya başladı ancak ben çalışmamı genişletmeyi planlıyorum.
‘Pınar has started writing her thesis, but I plan to expand my study.’

Experiment 2: Self-paced reading task

The self-paced reading task was designed to examine the real-time processing of subject pronouns. This task involved a non-cumulative, word-by-word reading of 16 test items and 16 fillers, which were displayed sequentially on a monitor. Each test item consisted of three components: a context sentence, a target sentence, and a yes-no comprehension question to assess understanding. This task was specifically developed to evaluate participants' online processing abilities and was thus suitable for testing the IH framework, which posits that deficits at the syntax-discourse interface are more likely to emerge in real-time processing rather than in structural representations.

To achieve this, the study reused the same set of test items from the acceptability judgment task. However, unlike the offline task, where participants evaluated both felicitous and infelicitous uses of subject pronouns in the target sentences, the self-paced reading task presented participants with only one version of the target sentence—either felicitous or infelicitous. These versions were counter-balanced across participants to ensure equal representation of both conditions.

Procedure

The tasks were conducted via the web-based platform PCIBex Farm (Drummond, 2013). Participants accessed the experiments through a personalized link, completing the tasks on their personal computers. This web-based approach is commonly used in offline and online studies, offering practicality and convenience as it allows participants to complete the experiment on their computers at their own pace and without external pressure, as evidenced in various studies (e.g., Chemla et al., 2017; Dillon et al., 2014; Enochson & Culbertson, 2015; Gibson et al., 2011; Sprouse, 2011; Wagers & Phillips, 2014; cited in Gračanin-Yüksek et al., 2020).

In the acceptability judgement task, participants were first asked to read the contexts and asked to evaluate the extent to which two target sentences (one with an overt pronoun, one with a null pronoun) accurately reflected the given context on a Likert scale ranging from -2 to 2 to determine how well each sentence reflected the context. Both target sentences are shown to participants instead of just one to ensure a direct comparison of how each pronoun type aligns with the given context. By presenting both options and counterbalancing the order of presentation, the study minimizes biases, such as order effects, and provides a clearer understanding of how participants evaluate the acceptability of null and overt pronouns relative to the same context. The task began with three practice sentences to familiarize participants with the procedure. The test items were organized into four distinct blocks following a Latin square design, with each block containing four test items and four filler sentences. Participants progressed through the task by pressing the space bar.

The self-paced reading task employed the non-cumulative moving window technique (Just et al., 1982). During the task, all test items were displayed in 18-point Times New Roman font, with black letters on a white background to ensure readability and reduce visual strain. Participants were instructed to press the space bar to advance and were advised to read the sentences at a normal pace and respond to the comprehension questions as accurately as possible. The task commenced with three practice sentences to familiarize the participants with the procedure, followed by 32 items: 16 experimental items and 16 fillers, which were organized into four distinct blocks using a Latin square design. In the task, participants read the contexts in their entirety by pressing the space bar. Upon pressing the space bar again, the context was masked, and the first word of the target sentence appeared, with the remaining words represented by dashes. This setup was designed to simulate natural reading. Each press of the space bar revealed a new word in the target sentence while masking the previous one. When participants reached the last word of the target sentence, a

comprehension question followed. These questions, presented in full, required a Yes or No response. Participants pressed the F button for Yes and the J button for No. There was no time limit for responses.

Data Analysis

For the acceptability judgement task, the scores of -2 and -1 were combined to indicate unacceptability and scores of 1 and 2 were combined for acceptability response. The score 0 was considered a third type of response, representing neutrality or indecision. For analytical purposes, descriptive data were reclassified into three values: 5 for acceptable, 3 for unacceptable, and 1 for ‘not sure’ responses. As for the analysis, the type of context (topic continuity vs. contrastive focus) was considered the independent variable, and subject distribution (null vs. overt) was the dependent variable. The aim was to understand the effect of the independent variable on the dependent variable, employing independent samples t-tests to explore the interaction between context type and subject type.

The self-paced reading task analysis focused on region-by-region measurement of reaction times (RTs) between space bar presses in target sentences. RTs during the reading of contexts and comprehension questions were excluded due to the specific nature of the study.

The target sentence is divided into several regions, with critical regions consisting of two words after the null or overt subject pronoun: the embedded object and the embedded verb in the second clause. For instance, in example (14), the critical regions include the direct object *çalışmamı* (study-NOM-1SG-ACC) and the verb *genişletmeyi* (expand-NOM-ACC).

- (14) Tezimi / yazmaya / başladım / ancak / ben / çalışmamı / genişletmeyi / planlıyorum.
‘I have started writing my thesis, but I plan to expand my study.’

For the self-paced reading task, the mean RT and standard deviation of the critical regions were calculated, rather than analyzing full sentence RTs. Average RTs for each context type were then determined. RTs faster than 200 ms and slower than 2000 ms were excluded, affecting 1.19% of the data. End-of-sentence responses were not explicitly checked or analyzed, which were used as fillers. Rather, the analysis focused on processing penalties, with the expectation that RTs for felicitous uses of null and overt subjects would be processed quicker, while infelicitous uses would result in longer RTs. To account for individual variations in reading speed, residual RTs were used instead of raw RTs.

Results

Acceptability Judgement Task

The investigation into the acceptability of null and overt subjects in different linguistic contexts has yielded significant insights regarding the distribution of null and overt subjects. Accordingly, Table 1 shows the acceptability percentages for two contexts with respect to two subject types.

In contrastive focus (CF) contexts, the descriptive data reveal that native speakers clearly distinguish between felicitous overt subject use, which has an acceptability rate of 78.57%, and infelicitous null subject use, which has a significantly lower rate of 30.71%. For overt subjects, the unacceptability responses were relatively low at 14.29%, indicating that overt subjects are predominantly considered appropriate in CF contexts. In contrast, null subjects had a significantly higher unacceptability rate of 47.50%, highlighting the general infelicity of null subjects in CF contexts. There appears to be considerable variation in the ‘not sure’

responses, with 21.79% for null subjects and 7.14% for overt subjects. These responses should be carefully analysed as they indicate a level of uncertainty and hesitation regarding the infelicitous use of subjects. Notably, the overall results suggest that overt subjects are more favoured or deemed more appropriate in CF contexts.

Table 1

Percentages of acceptability responses by context and subject type

Context/ Subject Type	Acc %	SD %	Not Acc %	SD %	NS %	SD %
CF						
Overt Subject	78.57	7.17	14.29	16.14	7.14	8.19
#Null Subject	30.71	9.25	47.50	10.21	21.79	14.91
TC						
#Overt Subject	61.07	5.51	25.36	6.26	13.57	6.32
Null Subject	70.71	6.46	15.36	5.67	13.93	5.76

Note. CF: Contrastive Focus; TC: Topic Continuity, Acc: Acceptable, Not Acc: Not Acceptable; SD: Standard Deviation, NS: Not Sure

Conversely, topic continuity (TC) contexts presented a different pattern. Null subjects, typically preferred in these contexts, showed a high acceptability rate of 70.71%, while overt subjects also maintained a respectable acceptability rate of 61.07%. For null subjects, the unacceptability responses were notably low at 15.36%, consistent with their high acceptability (70.71%) in TC contexts. This reflects their alignment with topic continuity. Surprisingly, overt subjects also showed moderate unacceptability responses at 25.36%, which is higher than their CF counterparts. This suggests that overt subjects, while somewhat acceptable in TC contexts, may occasionally disrupt the perceived topic maintenance. The rate of ‘not sure’ responses in TC contexts remained consistent across both subject types, highlighting a uniform level of uncertainty among respondents. This consistency suggests that in TC contexts, both null and overt subjects are deemed relatively appropriate, with a slight preference for null subjects.

As seen in Table 2, statistical analysis further validated these observations. The ANOVA revealed a significant interaction between context and subject type, $F=75.32$, $p < 0.0001$. Subsequent independent samples t-tests provided additional clarity. The t-test comparing the use of overt subjects between CF and TC contexts showed a significant difference, $t=4.29$, $p < 0.0001$, emphasizing that overt subjects are interpreted differently depending on the context. A similar pattern emerged for null subjects, where the comparison between CF and TC contexts revealed a significant difference, $t=-7.83$, $p < 0.0001$, indicating distinct preferences for null subjects based on the context type.

Furthermore, within-context comparisons highlighted significant differences in acceptability ratings between null and overt subjects. In CF contexts, a significant difference was found in the acceptability ratings of null versus overt subjects, $t=-11.23$, $p < 0.0001$. Conversely, in TC contexts, no significant difference was found in the acceptability ratings of null and overt subjects, indicating similar levels of acceptability in this context, $t=1.52$, $p < 0.1297$.

Table 2

Statistical comparisons of pronoun acceptability across contexts and subject types

Context/Subject Type	F-value	t-value	p-value
Context x Subject Type Interaction	75.32	-	< 0.0001
CF vs. TC (Overt Subject)	-	4.29	< 0.0001
CF vs. TC (Null Subject)	-	-7.83	< 0.0001
Within CF (Null vs. Overt Subject)	-	-11.23	< 0.0001
Within TC (Null vs. Overt Subject)	-	1.52	0.1297

Note. CF: Contrastive Focus; TC: Topic Continuity

Self-Paced Reading Task

Table 3 shows the mean RTs of two critical regions for each context type and subject.

Table 3

Reaction times for critical regions by context and subject type

Context/Subject	RTs (ms)	SD (ms)	RTs (ms)	SD (ms)
CF	Embedded Object		Embedded Verb	
Overt Subject	452.90	242.71	459.68	206.87
#Null Subject	473.01	252.99	495.63	234.09
TC				
#Overt Subject	421.30	173.85	463.66	203.88
Null Subject	442.70	186.14	478.75	208.53

Note. CF: Contrastive Focus; TC: Topic Continuity, RTs: Reaction Times, SD: Standard Deviation

The descriptive data indicate a distinction in processing speeds for subject types across both CF and TC contexts. Within CF contexts, overt subjects were processed faster as compared to infelicitous null subjects. Specifically, the RTs show that overt subjects were processed 20.11 milliseconds faster in the embedded object region and 35.95 milliseconds faster in the embedded verb region. This suggests a quicker cognitive recognition and integration of overt subjects in context where they are contextually appropriate.

Conversely, in TC contexts, the pattern reverses. Here, infelicitous overt subjects were processed faster than felicitous null subjects. The differences recorded are 21.4 milliseconds for the embedded object and 15.05 milliseconds for the embedded verb. This unexpected finding indicates that even in contexts where null subjects might be anticipated, overt subjects were processed with relative swiftness.

However, the ANOVA conducted to assess the interaction between context (contrastive focus vs. topic continuity) and subject types (overt vs. null) across each critical region did not yield statistically significant results. For the embedded object region, no significant effect was observed, $F(1,203)=2.03$, $p=0.109$. Similarly, for the embedded verb region, the results showed no statistical significance, $F(1,203)=1.28$, $p=0.281$. The absence of statistical significance suggests that although observable differences in processing times exist between subject types across contexts, these differences are not substantial enough to be considered statistically significant. This finding implies that the cognitive processing involved in understanding overt versus null subjects, within both CF and TC contexts across the two regions, may not be significantly influenced by the type of subject.

Discussion

The current study delves into the interpretive and processing mechanisms of null and overt subject pronouns at the syntax-discourse interface among native Turkish speakers. This investigation is anchored in the pursuit of understanding whether difficulties observed in L2 acquisition pertaining to subject pronoun distribution can be traced back to inherent properties of native grammars. The study is primarily informed by two competing L2 hypotheses in the literature: The Interface Hypothesis (IH) and the Pragmatic Principles Violation Hypothesis (PPVH).

The IH suggests that challenges at the syntax-discourse interface for L2 speakers manifest primarily in processing knowledge rather than representational knowledge. According to this perspective, the difficulties are less about the structural representation of language and more about the processing under real-time conditions. Conversely, the PPVH posits that deficits at the syntax-discourse interface are particularly evident in contexts of topic continuity where L2 speakers might misuse overt subjects, thus violating pragmatic constraints that govern subject pronoun use.

To empirically test these hypotheses with regard to native speakers, the study employed two methodological approaches: An acceptability judgement task and a self-paced reading task. Each method provided insights into different aspects of how subject pronouns are interpreted and processed by native speakers of Turkish.

The results from the acceptability judgement task revealed that native Turkish speakers do not uniformly interpret null and overt subjects. Overt subjects were frequently accepted even in contexts where their use was pragmatically redundant, in topic continuity conditions. This finding highlights a pragmatic flexibility among native speakers, where infelicitous use of overt subjects are tolerated. Such tolerance suggests that the use of null subjects in topic continuity contexts is less governed by strict pragmatic necessity.

Conversely, null subjects were often rejected in contexts where their use resulted in ambiguity, under contrastive focus conditions. This pattern indicates that native speakers prioritize clarity and coherence in discourse, preferring overt subjects to avoid ambiguity. This sensitivity reflects a strong adherence to discourse clarity, reinforcing the importance of explicitness in communication, particularly in contrastive focus contexts.

These findings align with previous research on native speakers, including studies by Lozano (2018), Margaza & Gavarró (2020) and Çınar (2021). These studies have similarly shown that native speakers are generally more tolerant of pragmatically redundant overt subjects but display a strict aversion to inappropriate or ambiguous uses of null subjects. The consistency between the current findings and the L2 literature further

supports the argument that native grammars exhibit inherent flexibility toward overt subject use while enforcing stricter constraints on the use of null subjects.

Therefore, one can argue that the findings reinforce the idea that Turkish speakers, similar to their Spanish and Greek counterparts, may adopt a strategy of overdescription rather than underdescription in their use of subject pronouns (Engelhardt et al., 2006; cited in Lozano, 2016, pp. 261-262). This tendency to employ overt subjects even when they are pragmatically redundant suggests a common cross-linguistic strategy among speakers of null subject languages. Such behavior provides empirical support for the PPVH, which posits that L2 speakers may frequently violate pragmatic constraints by overusing overt subjects in contexts where they are unnecessary.

The evidence from this study highlights that the misuse of overt subjects is not confined to L2 acquisition but is also observed in native language behavior. This finding is significant because it challenges the traditional assumption that such violations of pragmatic constraints are primarily a feature of L2 learners struggling with syntax-discourse interface integration. Instead, the results suggest that these patterns may reflect a broader phenomenon inherent to human language, even in native speakers who presumably have full command of their grammar.

This observation broadens the scope of the PPVH, suggesting that its principles may apply universally across null subject languages. If native speakers of Turkish, Spanish, and Greek share this tendency, it raises the question of whether overdescription is a general cognitive strategy rather than a language-specific or proficiency-related issue. The implications of this hypothesis are far-reaching, as they suggest that the interplay between syntax and discourse might involve inherent trade-offs between clarity and efficiency that are not unique to L2 learners but are embedded in the cognitive architecture of language use. Further research in other null subject languages is essential to test the generalizability of these findings and to determine whether the PPVH reflects a universal principle of human language.

However, it is important to note that the findings of the current study are incompatible with some prior research on Turkish, such as Gürel (2006) and Çelteç (2020). This difference might stem from differences in the methodologies and the nature of the tasks used. Gürel's task required participants to select images corresponding to sentences with null and overt pronouns. The explicit decision-making process in such tasks allows participants to reflect on and apply discursive rules consciously. As a result, the findings from Gürel's study might demonstrate clear sensitivity among both native speakers and L2 learners to the distribution of null and overt pronouns. On the other hand, Çelteç employed a narrative production task, analyzing how speakers use pronouns in discourse-pragmatic contexts. This method captures natural language use, highlighting how speakers align their pronoun choices with contextual constraints during production. On the other hand, the acceptability judgment task in the current study differs fundamentally from both the picture selection and narrative tasks. It measures participants' judgments of pragmatic appropriateness in controlled sentence contexts. Therefore, the incompatibility might arise from the methodological focus of prior studies on reflective and naturalistic language use, compared to the interpretative nature of the acceptability judgment task, which highlights a broader pragmatic tolerance. These methodological differences might explain why the findings of the current study diverge from previous research, despite all similar constructs at the syntax-discourse interface.

The self-paced reading task investigated the real-time processing of sentences involving null and overt subjects across different contexts by measuring participants' reading times in two critical regions. Unlike the acceptability judgment task, which demonstrated clear distinctions in how null and overt subjects were

interpreted, the self-paced reading task revealed no significant processing differences between contexts where the use of null and overt subjects was appropriate versus those where it was not. This finding indicates that, in real-time language processing, native Turkish speakers may not consistently detect or penalize grammatical infelicities, such as redundant overt subjects or ambiguous null subjects.

This lack of differential processing challenges the traditional assumptions drawn from offline studies, which suggest that native speakers should be sensitive to such infelicities. It raises the possibility that the cognitive mechanisms underlying real-time comprehension might operate differently from those involved in explicit grammatical judgments. Specifically, while native speakers can recognize and evaluate such constructions in a reflective, offline task, they might not rely on the same degree of syntactic or pragmatic scrutiny in spontaneous, online sentence processing.

These findings have significant implications for the IH, which posits that difficulties at the syntax-discourse interface should manifest in tasks that require integration of syntactic and pragmatic information in L2 processing. According to the IH, L2 speakers are expected to struggle with subject distribution and processing at this interface. However, the results of this study reveal that native Turkish speakers also fail to penalize infelicities in subject distribution during real-time processing, behaving similarly to L2 speakers observed in previous studies. One would expect native speakers to exhibit processing differences in managing acceptable versus unacceptable uses of null and overt subject constructions. However, these findings indicate that native speakers show consistent processing across these conditions. Therefore, this suggests that the challenges at the syntax-discourse interface are not unique to L2 speakers but may reflect a broader difficulty inherent in real-time language processing.

The absence of significant processing differences in native speakers indicates a potential gap between their online processing knowledge and their offline grammatical competence. While the offline task demonstrated different sensitivity to the overuse or underuse of subject pronouns, their online behavior indicates that this knowledge is not consistently accessible during real-time comprehension. This finding raises important questions about the universality of processing challenges at the syntax-discourse interface. It suggests that the IH may need to be expanded to account for such patterns in native language processing, highlighting the complexities of integrating syntax and discourse in real-time comprehension.

This consistency across contexts aligns with the findings of Judy (2015), which reported that Spanish native speakers did not register significant violations in CF contexts but did observe violations in TC contexts in offline tasks. The similarity extends to the online processing results of the current study, where native Turkish speakers, like their Spanish counterparts, failed to exhibit the expected processing differences when encountering felicitous versus infelicitous subject constructions. This lack of differentiation across contexts highlights a key challenge to the traditional L2-centric view of the IH. Accordingly, the absence of significant processing differences in both Turkish and Spanish native speakers suggests that this challenge is not exclusive to L2 learners. Instead, it may point to an intrinsic property of native speaker grammars, wherein certain constraints at the syntax-discourse interface do not consistently manifest in real-time processing.

This observation raises questions about the cognitive mechanisms underlying the integration of syntactic and pragmatic information. This disparity suggests that real-time processing might involve different priorities, that override strict adherence to syntactic and pragmatic norms. It also implies that the processing deficits highlighted by the IH may be a universal feature of human language processing, rather than a developmental limitation specific to L2 acquisition.

By revealing parallels between native and L2 speakers in online tasks, these findings prompt a re-evaluation of the IH, suggesting that the challenges at the syntax-discourse interface may be intrinsic to language processing as a whole. Further cross-linguistic studies are essential to determine whether this pattern extends to other null subject languages and whether the observed processing behavior reflects universal cognitive constraints or language-specific adaptations.

Taken together, these insights suggest a complex interaction between the representations of subject pronouns at the syntax-discourse interface and the processing mechanisms underlying their use. The current study extended the implications of the IH and PPVH beyond L2 learning to include native grammar. Consequently, this calls for a reevaluation of how deficits at the syntax-discourse interface are conceptualized, moving towards a more integrated view that considers both native and L2 speaker behaviours. Further cross-linguistic studies are essential to fully understand whether the tendencies observed in Turkish are idiosyncratic or part of a broader pattern in null subject languages.

Conclusion

The present study has offered valuable insights into the interpretative and processing dynamics of subject pronouns in Turkish, challenging and expanding our understanding of the phenomena in native grammar. In alignment with the PPVH, the results indicate that native Turkish speakers often employ overt subjects inappropriately in contexts where they violate pragmatic constraints, suggesting a tendency towards overdescription. This tendency mirrors behaviours observed in other null subject languages and suggests that such usage may not solely be an artefact of L2 but a broader characteristic of native grammars. Native Turkish speakers also exhibited a lack of sensitivity to pragmatic constraints during online processing, paralleling behaviors often attributed to L2 learners. These findings imply that the processing challenges at the syntax-discourse interface may reflect broader cognitive constraints inherent in real-time language comprehension, rather than a deficiency specific to L2 acquisition.

This study also highlights the need for further research into the discourse-pragmatic factors across different null subject languages. The discrepancies observed between offline and online task performances suggest that our understanding of how subject pronouns are processed in real-time and their representation in the mental grammar may benefit from different methodologies.

In conclusion, the findings from this study not only contribute to the ongoing debate between the IH and PPVH but also emphasize the necessity of considering both native and non-native processing mechanisms in discussions about the syntax-discourse interface. Future cross-linguistic investigations will be crucial in determining whether the tendencies observed in Turkish speakers are unique or reflect a universal aspect of human language.

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