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Resolution of English Pronouns by Vietnamese EFL Learners

Abstract

Successful discourse comprehension involves accurate interpretation of anaphoric expressions such as pronouns (e.g., *he*, *him*) and reflexives (e.g., *himself*, *herself*), which is thought to be structurally constrained under the Binding theory. Previous research has shown that L2 learners whose L1 anaphors are resolved under structural constraints different from those of the L2 encounter greater difficulty interpreting L2 anaphoric expressions. This study explores Vietnamese EFL learners' knowledge of the Binding Principles (Chomsky, 1981) and their applications in anaphora resolution. Forty-five intermediate and advanced Vietnamese EFL learners completed a forced-choice anaphora test consisting of 24 items. Results reveal that the advanced learners are more accurate in selecting suitable antecedents for both pronouns and reflexives. However, the intermediate learners face challenges, particularly in interpreting pronouns, performing significantly worse than the advanced learners. The findings prompt discussions regarding the implications of the Binding Principles and the potential influence of pragmatic knowledge, suggesting the need for further investigations incorporating pragmatic aspects.

Keywords: pronoun interpretation, Vietnamese EFL learners, Binding Principles

Understanding language depends greatly on the language user's ability to interpret referential dependencies with accuracy. One key component in a referential dependency is an anaphor (i.e., pronouns and reflexives), which is

defined as an element used later in discourse to refer to an entity previously introduced. An example is given in (1) below to illustrate the phenomenon of a referential dependency with the anaphor *she*.

- (1) At the party, Mary_i was star-struck by John. She_i was not that easy to impress usually.

In (1), the pronoun *she* in the second sentence is used anaphorically, referring to the NP *Mary* mentioned in the previous discourse. *Mary* is the antecedent to the anaphor *she*. Pronoun interpretation in this case is seemingly effortless and is, in fact, crucial for the comprehension of those sentences. If the second sentence in (1) is uttered without a given context or any non-verbal gestures, it is unlikely that the hearer can identify the reference of the pronoun *she*. Therefore, successful communication depends on the speaker's clear establishment of the antecedent and the listener's ability to discern the co-reference between the anaphor and its antecedent.

A considerable number of studies have investigated how speakers process anaphoric dependencies across various contexts. Some researchers have emphasized the role of semantic cues (e.g., Arnold, 2001; Nguyen, 2017) and syntactic cues (e.g., Choi et al., 2018; Kim et al., 2015) in facilitating anaphora resolution. Additionally, extensive research has explored the impact of referential dependency length on the interpretation of anaphoric ties (e.g., Joseph et al., 2015; White, 1998). For instance, Joseph et al. (2015) observed that children experience no significant processing difficulties when interpreting anaphors, even when the antecedents are located several clauses away.

Many of the studies mentioned above adopt Chomsky's (1981) Binding Theory as their theoretical framework, which outlines the structural constraints necessary for interpreting anaphors. According to this framework, knowledge of the Binding Principles enables language users to accurately select the correct antecedent from among multiple candidates. Recently, research has increasingly focused on whether EFL and ESL learners possess implicit knowledge of these principles and whether they apply them when interpreting English anaphors (Felser & Cunnings, 2012; Rago et al., 2011). In this context, implicit knowledge refers to learners' ability to resolve anaphora by applying the Binding Principles. This concept of implicit knowledge will also be central to the present study.

Despite considerable research, the ability of non-native English speakers to accurately comprehend anaphoric dependencies remains a subject of ongoing debate, as findings across studies have been inconsistent. For instance, Finer and Broselow (1985) examined how Korean EFL learners interpret English reflexives. In Korean, reflexive interpretation is flexible, allowing both local (same clause) and non-local (different clause) antecedents. However, the Korean participants in their study were able to interpret English reflexives in line

with the Binding Principles, suggesting that they could adjust to the syntactic constraints of English. Similarly, Rago et al. (2011) conducted a comparable study with Korean EFL learners and found that participants at varying proficiency levels successfully acquired complex syntactic properties such as the Binding Principles, overcoming first language transfer and achieving near-native performance.

However, other studies highlight potential difficulties in anaphora resolution. For instance, Felser et al. (2009), using eye-tracking technology, examined the online processing of anaphora resolution among Japanese EFL learners. They found that although the participants adhered to the Binding Principles when interpreting anaphors, they were still prone to distraction by competitors that violated these principles. These findings suggest that while learners may internalize the rules, interference from competing elements can impact real-time processing.

The significance of this research lies in the fact that the knowledge of the Binding Principles, though crucial for understanding discourse, cannot be explicitly taught (White, 1995). Nonetheless, mastery of anaphora resolution is essential, as it is commonly tested in standardized English exams (Cohen & Upton, 2006; MacMillan, 2007). Despite a substantial body of cross-linguistic studies, research on Vietnamese remains relatively sparse. Studies by Ivan and Bui (2019) and Bui (2019) explored how native Vietnamese speakers interpret Vietnamese pronouns and reflexives, revealing that Vietnamese syntax often allows deviations from Chomsky's (1981) Binding Principles. However, little is understood about how Vietnamese EFL learners grasp the Binding Principles in English or process English anaphors. Given the pivotal role of anaphora resolution in discourse comprehension, addressing this gap in research is crucial.

This study aims to address the gap in the literature concerning Vietnamese EFL learners' understanding of the English Binding Principles and their ability to resolve anaphora. It seeks to determine whether these learners possess knowledge of English Binding Theory and can effectively apply it to interpret reflexives and pronouns. Additionally, the study considers learners at different proficiency levels to explore how proficiency interacts with their anaphora resolution skills. To bridge this research gap, the following questions will be investigated:

1. Do Vietnamese EFL learners possess knowledge of the Binding Principle A in the resolution of English reflexives?
2. Do Vietnamese EFL learners possess knowledge of the Binding Principle B in the resolution of English pronouns?
3. To what extent can Vietnamese EFL learners of different levels of proficiency accurately interpret English pronouns and reflexives?

To investigate the above research questions, this study utilized an anaphora resolution test to assess participants' ability to resolve pronouns and reflexives. The test results were analyzed across varying proficiency levels to examine the potential interaction between EFL learners' language proficiency and their knowledge of English Binding Principles. Previous research has shown that EFL learners can effectively assign antecedents to reflexives and pronouns, successfully differentiating between local and non-local options, even when their L1 and L2 exhibit structural differences. Bui's (2019) doctoral dissertation, focusing on Vietnamese learners, highlighted a preference among native Vietnamese speakers for non-local antecedents in pronoun resolution. These insights guided the current study's hypotheses. It is hypothesized that Vietnamese EFL learners would perform well on the anaphora resolution test, accurately identifying antecedents for English reflexives and pronouns, reflecting their understanding of the Binding Principles.

Background Review

Binding Principles in English

Chomsky's (1981) Binding Theory, introduced in his influential work *Lectures on Government and Binding*, has played a pivotal role in the study of syntax and has inspired significant research across languages. The theory focuses on how pronouns, reflexives, and other referential expressions relate to their antecedents, establishing formal constraints to prevent ambiguity in sentences. Among its three core principles (A, B, and C), Principles A and B govern the use of reflexive and non-reflexive pronouns, respectively, drawing boundaries around their appropriate syntactic domains. These principles have been the subject of extensive debate, revision, and extension by linguists over the decades.

Binding Principle A is part of Chomsky's (1981) Binding Theory, which focuses on the behavior of reflexive pronouns. According to this principle, reflexive pronouns (e.g., *himself*, *herself*, *themselves*) must have an antecedent within the same local domain—usually the smallest clause or syntactic boundary in which the reflexive appears. Chomsky's theory posits that this constraint ensures that reflexives refer to an entity within a structurally close environment, preventing them from referring to entities outside the immediate clause. Another requirement for binding involves the anaphor being c-commanded by a co-indexed antecedent. Carnie's (2013) elaboration of the conditions for c-commanding reads "node A c-commands node B if every node dominating

A also dominates B, and neither A nor B dominates the other,” (p. 127). To illustrate the requirements, consider (2) below.

(2) Emily_j believes that Annai loves herself_{i/j*}.

In example (2), the only plausible antecedent for the reflexive *herself* is *Anna*, not the other subject, *Emily*. It is hypothesized that Binding Principle A is at work here. Although the three noun phrases (NPs) share semantic features such as gender and number, the exclusion of *Emily* as the antecedent suggests that an additional syntactic principle is guiding the interpretation of *herself*. Specifically, in (2), *Anna* serves as the most plausible antecedent of *herself* because these two NPs are in the same local domain. Conversely, *Emily* cannot serve as the antecedent for *herself* because the two NPs do not appear within the same clause, violating the clause-mate condition posited by Binding Principle A. The clause-mate distinction will hereafter be used to categorize NPs like *Emily* as non-local antecedents and NPs like *Anna* as local antecedents. The distinction shall facilitate further investigation in this study regarding participants' understanding of the Binding Principles by testing their ability to distinguish between local and non-local antecedents. Regarding the c-command requirement, it can be observed in (2) that every node that dominates *Anna* also dominates *herself* and neither of them dominates the other, which leads to the conclusion that *Anna* c-commands *herself*. Consequently, *Anna* also meets the prerequisite of c-commanding, qualifying as an antecedent for the reflexive *herself*.

Binding Principle B, on the other hand, focuses on the behavior of pronominals, highlighting that non-reflexive pronouns (e.g., *he*, *she*, *they*) must not have an antecedent within the same local domain. Instead, they must refer to an entity outside the immediate clause. This principle ensures that pronouns have disjoint reference, meaning that the pronoun and its potential antecedent cannot corefer if they appear within the same syntactic boundary (Chomsky, 1981). This principle is illustrated with the example (3) below.

(3) Emily_j believes that Annai loves her_{i*/j}.

Since the pronoun must remain free within its binding domain, *Anna* is no longer a possible antecedent for the pronoun *her*. Instead, the alternative option, *Emily*, satisfies the locality constraint by not binding the pronoun *her*, making *Emily* the appropriate antecedent for *her* in (3).

Binding Principles in Vietnamese

As previously mentioned, Ivan and Bui (2019) highlighted that Vietnamese permits violations of all three principles outlined in Binding Theory. Specifically, their study examined the use of the gender-neutral Vietnamese reflexive *mình* and the third-person singular pronoun *nó*. These violations are illustrated in the examples provided in (4):

- (4) Tom_i nói là John_j đánh mình_{i/j}.
 Tom say that John hit SELF
 ‘Tom said that John hit him/himself.’

If the example in (4) were analyzed using Binding Principle A in English, it would rule out *Tom*, a non-local NP, as the antecedent for the reflexive NP. However, unlike English, the Vietnamese reflexive *mình* can refer to both local and non-local subjects. Moreover, some native Vietnamese speakers in Bui’s (2019) study indicated that, for sentences like (4), selecting long-distance antecedents feels more natural.

Now consider (5) below.

- (5) Tom_i nói là John_j đánh nó_{i/j}.
 Tom say that John hit 3SG .
 ‘Tom said that John hit him/himself.’

Similarly, if the third person pronoun *nó* in Vietnamese were analyzed using Binding Principle B in English, its antecedent could only be *Tom*, which is a non-local NP. This is not the case, though, since *nó* can also take the local NP *John* as an antecedent. Ivan and Bui (2019) concluded that “the classic versions of Conditions A and B are grammaticized in English, whereas they operate more as preferential soft constraints in Vietnamese” (p. 50).

Bui (2019) explored how native Vietnamese speakers process pronouns in real-time when faced with multiple potential antecedents. To investigate this, she employed a self-paced reading task in four conditions, given in examples (6)—(9) below:

(6) Multiple match

- Nhỏ Liên nói rằng nhỏ công nhân tin rằng nó làm được.
 SUB Lien say that SUB worker trust that SUB do able.
 ‘Lien. SUB said that the worker. SUB trusted her. SUB to be able to do it.’

(7) Non-local match

Bà Liên nói rằng nhỏ công nhân tin rằng bà làm được.
 HON Lien say that SUB worker trust that HON do able.
 ‘Lien. HON said that the worker. SUB trusted her. HON to be able to do it.’

(8) Local match

Bà Liên nói rằng nhỏ công nhân tin rằng nó làm được.
 HON Lien say that SUB worker trust that SUB do able.
 ‘Lien. HON said that the worker. SUB trusted her. SUB to be able to do it.’

(9) No match

Nhỏ Liên nói rằng nhỏ công nhân tin rằng bà làm được.
 SUB Lien say that SUB worker trust that HON do able.
 ‘Lien. SUB said that the worker. SUB trusted her. HON to be able to do it.’

By analyzing participants’ reading times across multiple regions, Bui (2019) observed a bias toward non-local antecedents and against local ones when Vietnamese speakers interpreted pronouns, particularly in conditions where multiple antecedents were possible, that is, the multiple match condition. The findings suggest that although Vietnamese syntax allows violations of this principle, speakers still demonstrated a degree of adherence to the Binding Principles when interpreting Vietnamese pronouns.

Previous Studies

Pronoun Interpretation by English Native Speakers

Chien and Wexler (1990) conducted a pioneering study examining young native English speakers’ understanding of the Binding Principles through three experiments. Their participants, aged two to six, were all native English speakers. The experiments featured simple, child-friendly tasks to ensure the participants could easily follow the instructions. In one experiment, the children participated in role-play with toys, responding to prompts that contained either a pronoun or a reflexive, as in (10) and (11) below.

(10) Melody wants Alice to give her a crayon.

(11) Melody wants Alice to give herself a crayon.

In examples (10) and (11), *Melody* refers to a stuffed animal present during the experiment, and *Alice* is one of the participants. According to Principle B,

in (10), *Melody* should serve as the correct antecedent for *her*. In contrast, based on Principle A, in (11), *herself* should refer to *Alice*. Chien and Wexler (1990) hypothesized that children who understood the Binding Principles would give the crayon to *Melody* when prompted with (10) and to themselves when hearing (11). The overall results from these experiments showed that by age six, children could correctly identify local antecedents for reflexives but struggled to associate pronouns with non-local NPs. In other words, the children in Chien and Wexler's (1990) study demonstrated knowledge of Principle A but appeared to allow violations of Principle B.

In response to this phenomenon, Chien and Wexler (1990) proposed several theories to explain the observed asymmetry. They initially explored the Universal Grammar—Constrained Maturation theory, suggesting that children's poorer performance compared to adults in anaphora interpretation could be attributed to developmental maturation. It remains unclear, however, why maturation would affect pronouns but not reflexives. Ultimately, the researchers concluded that children's difficulty with pronouns stemmed from their inability to recognize certain pragmatic cues, which they referred to as Principle P. This principle suggests that contextual factors can override the original Binding Principles, influencing binding decisions. When context-driven interpretations are unclear, readers may resort to random choices for antecedents. One instance where Principle P applies is accidental coreference—a scenario where two referring expressions unintentionally corefer, that is, share the same referent, as shown in (12) below.

(12) I think we came across Emma_i yesterday. Or maybe the woman_i just looked a lot like her_i.

Analyzing (12) through the lens of Binding Principle B is challenging, as the pronoun *her* should not share the same referent as the local NP *the woman*. However, the context enables readers to interpret this co-reference. Chien and Wexler (1990) argued that children, while knowing Principle B, have yet to develop this advanced pragmatic knowledge, leading them to make binding decisions without relying on it. It is noted that Principle P does not apply in sentences containing a bound variable. Thus, while Principle B governs the binding of all pronouns, Principle P is irrelevant for a pronoun that is a bound variable. If it is the case that children have knowledge of Principle B, but not Principle P, children are predicted to allow coreference in (13), but not in (14) which contains a bound variable.

(13) *Papa Wolfi point to him_i.

(14) *Every wolfi points to him_i.

The results of Chien and Wexler's (1990) experiment containing the above conditions support this hypothesis, suggesting that children's difficulty with pragmatic cues does not indicate a lack of understanding of Binding Principle B. What is particularly intriguing is that this pattern was also observed in subsequent studies focused on child participants (Elbourne, 2005; Reinhart, 2004). Since this study involves intermediate-level learners, who are expected to exhibit similar traits to native English-speaking children, it is anticipated that a similar asymmetry between their comprehension of English pronouns and reflexives will emerge.

Pronoun Interpretation by Non-Native Speakers

Similar trends are evident in the growing number of studies examining the ability of EFL learners from different L1 backgrounds to accurately interpret English pronouns and reflexives. However, the literature on EFL learners remains characterized by mixed results. Finer and Broselow (1985) conducted a study using picture identification with six native Korean EFL learners to investigate how their L1 influences the acquisition of English reflexives. Korean reflexive *caki*, like the Vietnamese reflexive *minh*, can take both local and non-local antecedents—contrary to what Binding Principle A allows. Therefore, it is expected that Korean speakers would be significantly influenced by their native grammar and would therefore choose both local and non-local antecedents when interpreting English anaphors, resulting in various grammatical errors. Additionally, Korean EFL learners would independently acquire knowledge of English Binding Principles, leading to fewer errors. The results obtained from the learners' responses supported the latter hypothesis. Participants showed a clear preference for local antecedents when interpreting English reflexives, indicating their ability to reset parameters and their understanding of English Binding Principles, despite the differences in their native language.

Rago et al. (2011) further supported the findings of Finer and Broselow (1985) through a truth-value judgment task (TVJT) involving 85 Korean EFL learners divided into three proficiency levels: beginner, intermediate, and advanced. Similar to a picture identification task, the TVJT includes visual representations of sentences; however, participants were asked to determine whether a given sentence corresponds to the event depicted in the image. Their responses were then analyzed to assess their understanding of the Binding Principles. The results of Rago et al.'s study align with those of Finer and Broselow (1985), as the authors found that their participants were largely capable of accurately selecting antecedents for both reflexives and pronouns.

Expecting that L2 learners of English can adjust their L1 syntax and successfully adopt the principles of the target language, MacLaughlin (1998) conducted a study with 15 advanced Chinese and Japanese EFL learners to test their

interpretation of English reflexives. He found results similar to those of Finer and Broselow (1985) but provided a different explanation for his findings that merits attention. MacLaughlin argued that his participants not only understood the Binding Principles but also had the ability to recognize and re-evaluate the morpho-syntactic differences between English reflexives and those in Chinese and Japanese. The Chinese reflexive *ziji* and the Japanese reflexive *zibun*, much like the Vietnamese reflexive *mình*, can refer to both local and non-local NPs, which contrasts sharply with the English reflexive, constrained by Binding Principle A. Another key difference highlighted by MacLaughlin is that while the former can be expressed with just *self*, the latter always includes a pronoun, such as *her* in *herself* or *him* in *himself*. These morphological distinctions are closely linked to the syntax governing binding. Because *ziji* or *zibun* is not attached to a pronoun, they can broaden their local domain to find non-local antecedents. In contrast, an English reflexive, which is attached to a pronoun, lacks this linguistic flexibility and can only take local antecedents, aligning with Binding Principle A. Most importantly, MacLaughlin (1998) suggested that EFL learners may possess this knowledge, leading to their nearly native-like performance when interpreting English reflexives.

Drawing connections from the studies mentioned earlier, the characteristics of the Universal Grammar (UG) approach emerge. Despite the differences between participants' L1 and L2—evidenced by the violations of the Binding Principles of English that are permissible in their native languages—these subjects were still able to reset various constraints across languages and demonstrate their ability to accurately interpret English reflexives and pronouns. These findings partially support White's (2003) perspective on UG, which suggests it restricts the interlanguage grammar used by L2 learners. Specifically, the Full Access/No Transfer hypothesis, which posits that UG underpins second language acquisition, explains that learners of a second language retain access to UG, particularly in the early stages of learning. This results in a scenario where "L1 and L2 acquisition will proceed similarly and will end up at the same point" (Gass & Selinker, 2008, p. 167).

Method

Participants

The participants in this study included 25 advanced Vietnamese EFL learners and 20 intermediate learners from a college in Ho Chi Minh City. These subjects were classified into two proficiency levels based on their performance

on an English proficiency test, which was adapted from the Quick Placement Test (Kerr et al., 2012). Following this assessment, each participant attended a private testing session with the researcher to complete the main anaphora test.

Instruments

Proficiency Test

The study utilized the Quick Placement Test developed by Macmillan Education to categorize participants into different levels within the Straightforward coursebook series (Kerr et al., 2012). This test consists of 50 multiple-choice questions that progressively increase in difficulty, ranging from beginner to advanced levels. Of these questions, 40 assess students' grammatical proficiency, while the remaining ten evaluate their vocabulary knowledge. A conversion chart is also provided to help test takers determine their proficiency levels based on their scores. For this study, individuals scoring between 34 and 39 were classified as intermediate ($N = 20$), while those who scored between 46 and 50 were categorized as advanced ($N = 25$). These criteria were established by the test designers (Kerr et al., 2012) and were effectively applied in this research.

Anaphora Test

Participants from the two proficiency groups were asked to complete a questionnaire containing 43 forced-choice questions, which included 24 anaphora test items (target items), 16 fillers, and three practice items to familiarize them with the test format. Among the anaphora questions, 12 included a reflexive, while the remaining items featured a pronoun. Each test item provided context through the first sentence, followed by a sentence that contained either a reflexive or a pronoun, concluding with a final sentence. The first sentence introduced two noun phrases or proper names that were stereotypically associated with different genders, serving as the two potential referents from which participants needed to choose in order to answer the anaphora resolution questions.

The following description outlines the construction of the test designed to evaluate participants' knowledge of the Binding Principles, utilizing and modifying materials from the studies by Sturt (2003) and Bui (2019). Within each item pair, the reflexive and the context are held constant, while the gender of the non-local noun phrase (NP) is manipulated in one item to create a gender mismatch for the interpretation of the reflexive. Similarly, the gender of the local NP is altered in test items containing a pronoun. For example, in items (15)

and (16), both scenarios revolve around a performance and include the reflexive *herself*. In (16), the two characters are named Jennifer and Alice, both of which are stereotypically female names. In contrast, in (15), Jennifer is replaced with Thomas. As a result, (15) presents a single match for the reflexive *herself*, based on the shared semantic feature of [+female]. Conversely, (16) requires participants to choose between two potential matches for the same reflexive, which can only be accurately resolved with an understanding of Binding Principle A. The same reasoning applies to items (17) and (18).

(15) Reflexive, single match (RS)

Thomas and Alice practiced days and nights for the performance. Thomas was glad that Alice taught herself how to play the guitar. The performance was praised by many.

Q: Who was taught to play the guitar? Thomas/Alice.

(16) Reflexive, double match (RD)

Jennifer and Alice were chosen to perform at the opening ceremony. Jennifer was glad that Alice taught herself how to play the guitar. The event was in two weeks.

Q: Who was taught to play the guitar? Jennifer/Alice.

(17) Pronoun, single match (PS)

George and Anna registered to be on the team together. George was sure that Anna convinced him to join against all odds. We were thankful to have them.

Q: Who got convinced to join the team? George/Anna.

(18) Pronoun, double match (PD)

We asked George and James about when they joined the tennis team. George was sure that James convinced him to join against all odds. They were truly an incredible duo.

Q: Who got convinced to join the team? George/James.

The anaphora resolution questions are structured as subject questions written in passive voice, implicitly prompting participants to choose between the local and non-local noun phrases (NPs). To mitigate the risk of participants making guesses based on repetitive patterns or becoming overly focused on the test's purpose, 16 filler items were included. These filler items, like (19), share the same structure as the anaphora test but pose questions about trivial events unrelated to the participants' ability to resolve anaphora. With the exception of the first three questions, the remaining test items are arranged throughout the test following a Latin square design.

(19) Filler

Jay and Tony were seen fighting over this girl last week. Jay said that Tony hit him quite hard on the head. I wondered if they had made it up yet.

Q: What was the reason for Jay and Tony's fight? A girl/A treasure chest.

A significant modification in this study addressed the issue noted in the research by Felser et al. (2009) and Sturt (2003), where test items with identical contexts and wording could distract participants due to their similarity. Pilot study subjects reported that encountering a test item closely resembling another caused them to double-check their understanding of the context. Although no pilot participant used this resemblance as a shortcut to interpret the test, the potential for such confusion exists. Consequently, in the current study, pairs like (19) and (20) were altered so that the opening and closing sentences differed, while the sentences containing the pronoun remained the same.

The quick placement test was conducted in a conventional classroom setting under strict supervision. After providing their consent, participants completed an online quiz on Google Forms, adapted from the quick placement test. Google Forms automatically calculated the scores, which were not shared with the participants. Following the collection of data from the selected test takers, the researchers scheduled appointments for participants to take the anaphora interpretation test via Google Forms.

Data Analysis

The Google Forms auto-grading system was utilized to evaluate the responses of qualified participants. Mean scores were calculated and categorized into the four specified conditions, excluding fillers and samples. Subsequently, a *t*-test was conducted to compare the scores for the RS and RD conditions within and across different proficiency levels. The null hypothesis for the *t*-test posited that the difference in accuracy rates between the two data groups is statistically insignificant. This procedure was similarly applied to the PS and PD conditions. A statistically significant difference in participants' scores between the single match and double match conditions would indicate a lack of knowledge of the Binding Principles. Conversely, if no significant difference is found, it would suggest that learners are capable of resolving pronouns in accordance with the Binding Principles, suggesting their available knowledge of these principles. Additionally, interactions between variables such as proficiency level, types of pronouns, and gender matching were analyzed using a mixed analysis of variance (ANOVA) test. All statistical analyses in this study were conducted using R Statistical Software v.4.0.4 (R Core Team, 2021).

Results

Overall Results

Overall, the intermediate group performed significantly worse than the advanced group on the anaphora test, as indicated by their total accuracy scores ($p < 0.001$) in Table 1 and Figure 1. Table 1 also reveals consistent trends in the accuracy scores across the four conditions for both proficiency groups. Notably, when two gender-matching competitors were present, the advanced group scored statistically higher than the intermediate group in both the PD ($p = .003$) and RD ($p = .005$) conditions. However, similar proficiency-related effects were less pronounced in scenarios where a gender mismatch effectively eliminated one competitor. Specifically, the 25 participants in the advanced group did not demonstrate statistically superior performance compared to the 20 participants in the intermediate group in the PS ($p = .12$) and RS ($p = .224$) conditions.

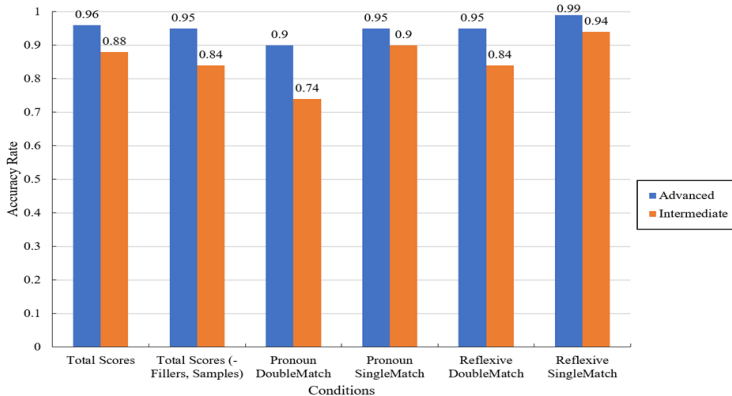
Table 1

Results of Anaphora Test for Two Proficiency Groups

Conditions	Advanced ($N = 25$)		Intermediate ($N = 20$)		p	$t(45)$
	M	SD	M	SD		
Pronoun, Double Match	5.4	0.645	4.45	1.191	0.003	3.21
Pronoun, Single Match	5.72	0.614	5.4	0.681	0.12	1.637
Reflexive, Double Match	5.72	0.614	5.05	0.826	0.005	3.022
Reflexive, Single Match	5.92	0.277	5.65	0.933	0.224	1.251

Figure 1

Mean Accuracy Scores (in %) by Proficiency Groups in the Anaphora Test



Proficiency Effects

In addition to comparing group performance to uncover the effect of proficiency levels on anaphora resolution, it is important to analyze the data within each group. Table 2 highlights the differences in scores for the PS and PD conditions among the advanced and intermediate groups, which may reveal whether advanced Vietnamese EFL learners have the ability to interpret pronouns and understand Binding Principle B. Specifically, while there were no significant differences in the scores of advanced participants across the two pronoun conditions ($p = .079$), it is noteworthy that intermediate participants faced significant challenges when interpreting pronouns in scenarios with multiple gender-matching NPs. This difficulty is reflected in the statistically significantly lower mean scores of the intermediate group between the PS and PD contexts ($p = .004$). These results align with findings from various studies examining pronoun resolution among English-speaking children and L2 learners below advanced proficiency levels.

Table 2

T-tests Results for Pronoun Conditions in Two Groups

Proficiency group	Pronoun, Double Match		Pronoun, Single Match		p	t
	M	SD	M	SD		
Advanced ($N = 25$)	5.4	0.645	5.72	0.614	0.079	-1.796
Intermediate ($N = 20$)	4.45	1.191	5.4	0.681	0.004	-3.097

Table 3 presents the results of t-tests examining participants' scores in the RD and RS conditions related to their ability to interpret reflexives. Specifically, both advanced and intermediate participants made more errors when resolving reflexives in scenarios with a non-local and gender-matching antecedent (RD condition). However, the mean correct responses were not significantly different from those in the condition where only the local antecedent matched the reflexive in terms of gender. This trend holds true for both the advanced ($p = .523$) and intermediate ($p = .377$) groups. These findings are expected to provide insights into Vietnamese EFL learners' ability to resolve English reflexives across different proficiency levels.

Table 3

T-tests Results for Reflexive Conditions in Two Groups

Proficiency group	Reflexive, Double Match		Reflexive, Single Match		p	t
	M	SD	M	SD		
Advanced ($N = 25$)	5.72	0.614	5.92	0.277	0.523	-0.643
Intermediate ($N = 20$)	5.05	0.826	5.65	0.933	0.377	-0.908

Interaction Effects

A three-way repeated measures ANOVA was performed, with Proficiency Level as the within-subject variable and Pronoun Type and Gender Matching as the between-subject variables. The results illustrating the interactions among these variables are presented in Table 4.

Table 4

Effects of Proficiency, Pronoun Type, and Gender-Matching: ANOVA Results

Effects	Number of Correct Answers	
Proficiency Level	$F(1,172) = 28.357$	$p < 0.001$
Pronoun Type	$F(1,172) = 4.578$	$p = 0.034$
Gender Matching	$F(1,172) = 22.509$	$p < 0.001$
Proficiency Level * Pronoun Type	$F(1,172) = 0.002$	$p = 0.967$
Proficiency Level * Gender Matching	$F(1,172) = 8.24$	$p = 0.005$
Pronoun Type * Gender Matching	$F(1,172) = 0.078$	$p = 0.781$
Proficiency Level * Pronoun Type * Gender Matching	$F(1,172) = 0.062$	$p = 0.803$

In addition to the effects previously reported using t-tests, Table 4 reveals a significant interaction between Proficiency Level and Gender Matching regarding the number of correct responses ($F(1,172) = 8.24$, $p = 0.005$). Conversely, the interaction between Proficiency Level and Pronoun Type had little effect on the accuracy of responses ($F(1,172) = 0.002$, $p = 0.967$). Similarly, the interaction between Gender Matching and Pronoun Type was not statistically significant ($F(1,172) = 0.078$, $p = 0.781$). Furthermore, there was also an insignificant interaction among all three variables—Proficiency Level, Gender Matching, and Pronoun Type ($F(1,172) = 0.062$, $p = 0.803$).

Discussion and Conclusion

This research aimed to explore Vietnamese EFL learners' ability to interpret English pronouns and reflexives and their understanding of the Binding Principles. The results from the forced-choice questionnaire provided a foundation for discussing these topics. The mixed ANOVA test results indicated significant main effects of Proficiency Level on participants' anaphora interpretation abilities ($F(1,172) = 28.357$, $p < 0.001$). Specifically, intermediate participants struggled more than their advanced counterparts in the anaphora

test ($p < 0.001$). These findings were anticipated and closely align with those of Rago et al. (2011), who reported that their intermediate participants had a slightly lower accuracy rate in resolving anaphora (88.145%) compared to advanced participants (93.125%). Additionally, similarities can be observed among the advanced participants in both studies. Tables 2 and 3 show that advanced learners could successfully resolve both pronouns and reflexives, regardless of gender compatibility.

Several conclusions can be drawn from these findings. First, advanced learners demonstrate the ability to utilize semantic cues, such as gender compatibility, to resolve anaphora, evidenced by their nearly perfect accuracy with a single gender-matching antecedent. Second, even when key semantic clues are absent in double-match conditions, advanced participants maintained a level of accuracy comparable to that of single-match conditions. This suggests that these test items required participants to apply the constraints posed by the Binding Principles, indicating that advanced learners possess knowledge of both Binding Principles A and B. Secondly, their native-like performance supports the idea that L2 learners can access Universal Grammar and its syntactic constraints, allowing them to achieve near-native proficiency in a language other than their mother tongue. Finally, the high accuracy scores may be linked to the morpho-syntactic features of English and Vietnamese reflexives, similar to the findings of MacLaughlin (1998). It appears that the pronoun attached to the English reflexive *self* restricts the phrase's binding domain, preventing it from selecting a non-local NP. However, this study did not specifically address this topic, leaving no valid grounds to confirm this effect. Nonetheless, it is plausible that the morpho-syntax of English reflexives and Binding Principle A collectively influence participants' comprehension, contributing to their excellent performance on the test.

In contrast, the intermediate group's performance in resolving anaphora significantly differed from that reported by Rago et al. (2011). Rago et al. found relatively high accuracy rates among their intermediate participants for both pronouns (88.79%) and reflexives (87.5%). In the current study, however, a disparity emerged in the interpretation of the two pronoun types, as shown in Tables 2 and 3. While the test items involving reflexives showed no significant differences in gender compatibility, intermediate learners faced greater challenges in resolving pronouns when two gender-matching competitors were present. This suggests that these participants struggled to rely on the Binding Principles for accurate pronoun comprehension.

Several explanations may account for this discrepancy between pronoun and reflexive resolution. First, the findings could stem from transfer effects from the grammar rules of their mother tongue, Vietnamese. As noted in Bui's (2019) dissertation, Vietnamese pronouns can refer to both local and non-local antecedents, violating Binding Principle B. This syntactic flexibility may

confuse intermediate participants, leading to flawed choices between local and non-local NPs for English pronouns. However, this scenario seems unlikely. If intermediate learners were influenced by their L1, one would expect them to struggle similarly with reflexives, as the Vietnamese reflexive *minh* also allows violations of Binding Principle A by accepting both local and non-local antecedents. The current results, however, indicate otherwise. Additionally, while Vietnamese pronouns can accommodate both local and non-local antecedents, native Vietnamese speakers generally adhere to the Binding Principles, often opting for the non-local NP. Therefore, it is unlikely that intermediate English learners are significantly influenced by their L1 when resolving pronouns and reflexives.

Two factors may shed light on this phenomenon. First, research suggests that speakers with lower linguistic maturity—such as native children and intermediate-level learners—experience delays in resolving pronouns compared to native adults and advanced learners (Chien & Wexler, 1990; Elbourne, 2005; Reinhart, 2004). According to Chien and Wexler, the absence of Principle P or specific pragmatic cues plays a significant role in delayed pronoun processing. However, since this study did not explicitly isolate Principle P, as Chien and Wexler did, it cannot be definitively concluded that the intermediate participants rely on Principle B rather than Principle P. Even so, despite notable differences in pronoun resolution among intermediate learners based on gender compatibility, their mean accuracy rate in double-match conditions was approximately 4.45 out of 6 (around 74%). While this accuracy was lower than in other conditions, it indicates that participants correctly resolved the majority of cases, supporting the likelihood that they have full access to Binding Principle B.

Secondly, the performance on reflexive interpretation provides insight into the asymmetry between the two pronoun types. While intermediate participants performed significantly worse than the advanced group in resolving reflexives, no notable differences were observed within the intermediate group based on gender compatibility. As previously discussed in relation to advanced participants, knowledge of Binding Principle A, coupled with the distinct morpho-syntactic features of reflexives, likely facilitates accurate interpretation, even among less proficient learners. Therefore, the skewed results in this study may be attributed to the relatively greater accessibility of linguistic resources for reflexive resolution.

The implications derived from the significance of this study are twofold. Firstly, research data indicates that Vietnamese EFL learners, particularly those with higher levels of English proficiency, have a solid understanding of the Binding Principles. This is demonstrated by their ability to accurately interpret anaphora. These findings lend support to the availability of Universal Grammar access during second language acquisition, particularly in relation to anaphora resolution. This study highlights that the interpretation of pronouns

and reflexives varies considerably between English and Vietnamese, with the grammatical rules of Vietnamese offering more flexibility in selecting appropriate antecedents. Initially, this flexibility might seem to pose significant challenges for some Vietnamese EFL learners. However, the high accuracy rates in anaphora resolution among these participants suggest that universal grammar constraints are accessible to foreign language learners, aiding them in making the correct referential choices in a new language and avoiding reliance on interlanguage systems for anaphora interpretation.

It is essential not to overlook the poorer performance of the intermediate learners, particularly in conditions requiring them to select the correct antecedent between two gender-matching NPs. Additionally, these findings underscore the importance of explicit instruction in teaching anaphora resolution, especially regarding pronouns. Explicit instruction is critical for two reasons. First, anaphora resolution is vital for comprehension; students need to resolve anaphora not only in stressful tests like the one in this study but also to understand conversations and readings both subconsciously and consciously. Second, while resolving anaphora may seem straightforward—given that learners encounter it daily and teachers appreciate their knowledge of the Binding Principles—the data in this study revealed that even high-proficiency learners made mistakes in understanding anaphora, particularly pronouns. Therefore, it is recommended that teachers provide clear, explicit guidance to help students achieve accurate interpretations. Furthermore, educators should be cautious about any underlying pragmatic cues that may lead to violations of the Binding Principles, and they should clarify these details to avoid misunderstandings.

Despite the anticipated implications and efforts to enhance the test design, this paper is not without its limitations. First, the proficiency test used in this study lacked reliability for several reasons. Since proficiency level was used to categorize participants into two groups and served as a variable in the research, the test requires significant revision. This could involve consulting additional literature in the field to gather references for the test and rigorously assessing its reliability for better application. Such improvements are expected to yield more accurate groupings based on participants' proficiency levels.

Finally, while our study provides evidence that the Binding Principles play a central role in antecedent selection during anaphora resolution, it is important to acknowledge that we did not systematically explore other potential linguistic rules or constraints that could also influence this process. Factors such as discourse context, pragmatic cues, and sentence structure might affect how learners resolve anaphors, but these were not the primary focus of our study. As noted earlier, this study also did not address Principle P, a crucial factor in pronoun resolution. Principle P remains an unexamined variable and should be incorporated in future research exploring learners' abilities to comprehend nominal pronouns. It is recommended that experiments similar to those by

Chien and Wexler (1990), which investigated bound and nominal pronouns, be considered for future studies. Additionally, cognitive processing limitations and individual differences among learners—such as proficiency level and exposure to the target language—may also impact anaphora resolution and should be taken into account in subsequent research.

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