Linguistics Study and Critical Thinking: Two Sides of the Same Coin?

Nu Anh Vo[a,*], Stephen H. Moore[b]

[a] nuanhvo@hcmussh.edu.vn, Department of Linguistics, Macquarie University, Australia; Faculty of English Linguistics and Literature, University of Social Sciences and Humanities, Vietnam National University Ho Chi Minh City, Vietnam
[b] stephen.moore@mq.edu.au, Department of Linguistics, Macquarie University, Australia
[*] Corresponding author, nuanhvo@hcmussh.edu.vn

ABSTRACT

From a linguistic perspective it seems intuitive that a strong link would exist between the study of linguistics and critical thinking (CT). After all, linguistics is about making sense of language analysis, which contributes to the enhancement of CT while CT, in reciprocation, enables meaningful analysis. Yet this link has virtually never been clearly defined or made explicit either in studies on linguistics teaching and learning or in those on CT development. This paper explores the relationship between linguistics study and CT in the Vietnamese context from the perspectives of undergraduate English Linguistics students and their lecturers, with a view to improving both students' linguistics study and their CT. Drawing on data collected in questionnaires and interviews at a public university in Vietnam, the findings of the study reveal a variety of aspects of linguistics tasks and classroom activities where the link is significant as well as a range of specific CT skills and dispositions that are related to linguistics teaching and learning. In general, the students and the lecturers showed

a positive attitude towards the integration of CT into linguistics teaching and learning, but challenges and barriers to this integration were identified. The study suggests the use of problem-solving tasks and open-ended questions for fostering the reciprocal relationship between linguistics study and CT.

Keywords: linguistics study, critical thinking, reciprocal relationship, problem-solving tasks, open-ended questions

Introduction

The studies of linguistics and critical thinking (CT) are two crucial fields of study and practice that have a significant impact on the way we understand and use language in today's world (Canada Institute of Linguistics, n.d.; Tatsumi, 2018). Linguistics study provides a deep understanding of the structure, meaning, and usage of language, shedding light on the nature of human communication and the cognitive processes underlying language use (Linguistic Society of America, n.d.; Macaulay & Syrett, n.d.). Due to this, it helps boost communication skills and plays a key role in professionalising the communication of people working in a wide range of professions, not least the profession of language teaching (Canada Institute of Linguistics, n.d.; Chappell & Moore, 2012; Edge, 1988; Macaulay & Syrett, n.d.). CT, on the other hand, allows language users to analyse, evaluate, and make informed decisions about the information they encounter (Davies, 2022; Fisher, 2011; Heard et al., 2020). With CT skills, individuals can assess the credibility of sources of information, understand the underlying motivations behind different types of communication, and evaluate the potential impacts of different messages on themselves and others (Fisher, 2011). In addition to this, the use of CT is vital for clarifying one's thoughts and opinions and presenting them in a clear and concise manner (Fisher, 2011). All of these, therefore, make CT an indispensable tool for navigating diverse and intricate discourses about language (Wangdi & Savski, 2022).

From a linguistic perspective, there is potentially a strong link between linguistics study and CT, in which CT underlies effective teaching and learning of linguistics and vice versa. This potential link basically lies in the development of linguistic thought – "Western thinking about language, meaning and communication" (Harris & Taylor, 1997, p. i), linguistic theories "as complex networks of more or less sophisticated arguments and counter-arguments" (Kertész & Rákosi, 2014, p. 4), and "the connection between logic and linguistics" (Gregory, 2015, p. 7). Research on CT in linguistics study is, therefore, a valuable and significant area of study that can deepen our understanding of how CT can be incorporated into the study of

linguistics, and how it can be effectively taught and acquired (Nguyen & Nguyen, 2017). In addition, it is beneficial to illuminate the challenges that students face when learning to think critically in the context of teaching and learning linguistics and to identify ways to address these challenges (Nguyen & Nguyen, 2017). This can ultimately lead to the development of more effective teaching and learning practices in the field of linguistics.

The potential link between linguistics study and CT, however, remains insufficiently researched despite its great importance to both fields. In the existing literature, although many studies have been conducted on either linguistics or CT in language teaching and learning, there are "very few on explicitly teaching linguistics through core research in the discipline" (Pappas et al., 2019, p. e340) and clearly even fewer on the relationship between linguistics study and CT. Thus, this paper contributes to the literature on the teaching and learning of both linguistics and CT, seeking to understand how linguistics study and CT interact with each other with a view to improving both students' linguistics study and their CT skills.

The remainder of the paper is organised as follows: The second section examines the relevant literature on the relationship between linguistics study and CT and presents the research questions that this study focuses on. The third section describes the study's research methodology. The findings of the study are reported and discussed in the fourth and fifth sections respectively, before concluding remarks are provided.

Literature Review and Research Questions

Linguistics Study and the Importance of Critical Thinking to Linguistics Study

Linguistics is "the study of human language" (Fromkin et al., 2018, p. xvi). As a discipline, it provides "knowledge about language and languages" and "an important sense of humanity – what it actually means to be human, as opposed to some other form of animal life" (Moore, 2007, p. 4). In linguistics, students learn about many aspects of human language, including sounds, words, sentences, meaning, the origins of language, the nature of human language, the psychology of language (i.e., language acquisition and language processing), and language and society (i.e., language in society, language change, and language and culture) among others (Fromkin et al., 2018).

According to Macaulay and Syrett (n.d.), linguistics programs are "organized around different aspects of the field". Although undergraduate linguistics programs in different countries and universities may vary in their emphases, structures, and approaches, they often share broad common

purposes, similar requirements, and standard textbooks. In many undergraduate programs, linguistics courses often comprise an introductory course in linguistics, phonetics and phonology, morphology, syntax, semantics, pragmatics, systemic functional grammar, and discourse analysis, among others (Macaulay & Syrett, n.d.). These linguistics courses provide students with knowledge of the core areas of linguistics, enhancing and enriching their understanding of how language is used and developed over time.

CT, on the other hand, is perceived in one of its most widely used definitions as "reasonable reflective thinking focused on deciding what to believe or do" (Ennis, 1989, p. 4). In recent years, research in teaching linguistics has shed some light on the importance of CT to linguistics study. For example, Anderson (2016) conducted a think-aloud study of undergraduates in an introductory linguistics course to understand how they learned to reason scientifically about phonology. As Anderson (2016) explained, "A core element of scientific reasoning in linguistics is the ability to think about language as observable data and to draw conclusions from one's empirical observations" (p. e274). The study provided insights into novice phonology students' mental representations of key linguistic concepts and made recommendations for instructors of introductory linguistic courses to help students cross "the threshold to linguistic thinking" and develop the ability to reason scientifically about language (p. e274). In the Vietnamese context, Nguyen and Nguyen's (2017) action research, although not focusing exclusively on CT, shows the positive influence of explicit higher-order thinking skills instruction and assessment on students' learning of linguistics "in terms of the learning process, performance in assessment, creativity, and motivation to learn" (p. 113). As far as CT is concerned, the findings of the study indicated that the improvement of analytical and CT skills enabled students to gradually construct strategies to get the most of themselves in learning tasks, even in demanding tasks in such a theoretical subject as linguistics.

Critical Thinking, its Linguistic Factors and the Contribution of Linguistic Courses to the Development of Critical Thinking

CT is a complex concept which can be traced back to "the teaching practice and vision of Socrates 2500 years ago" (Paul et al., 1997, p. 8). In the existing literature, the term "critical thinking" has been looked at from different perspectives and defined in different ways (Davies, 2015). Despite variations in definitions, many of them hint at the importance of CT skills and dispositions. Davies (2015) brings together the most important of these which have been identified by key scholars in the field. He notes that CT

skills, though related, are quite varied: They include analysing arguments, claims or evidence; judging or evaluating arguments; making decisions or problem-solving; inference-making; predicting; reasoning verbally; interpreting and explaining; identifying assumptions; defining terms; asking questions for clarification; and thinking about thinking (Davies, 2015, p.53). As for CT dispositions, Davies notes that they include respect for alternative viewpoints; inquisitiveness; open-mindedness; fair-mindedness; the propensity or willingness to seek or be guided by reason; a desire to be well-informed; tentativeness, scepticism, tolerance of ambiguity, and appreciation of individual differences; seeing both sides of an issue; intellectual humility, intellectual courage, integrity, empathy, and perseverance (Davies, 2015, p. 56).

The question of how CT can be taught has long been subject to a debate between the 'generalists' and the 'specifists'. Fostering students' CT in linguistics courses seems to achieve a happy balance between these two views. The generalists find it helpful to "teach CT abilities and dispositions separately from the presentation of the content of existing subject-matter offerings" (Ennis, 1989, p. 4). It is interesting to note that language constitutes an essential component of CT skills and a fundamental aspect of CT teaching within the generalist view. Actually, in most studies on CT, a person's CT is investigated through the medium of linguistic expression (see, for example, Floyd, 2011Stapleton, 2001). As Sharma (1995, p. 35) aptly observes, "The vehicle of all thinking is language, and therefore, so it is of critical thinking." In learning CT, students will be taught, for example, the language of reasoning, the patterns of reasoning, the difference between language in which arguments are presented and language in which explanations are offered, and ways of clarifying and interpreting expressions and ideas (Fisher, 2011). This is, in fact, what students can learn from linguistics courses, especially from courses in syntax, semantics, and discourse analysis. The specifists, by contrast, hold that CT is subject specific (see, for example, McPeck, 1981). The existing literature has looked into the incorporation of CT into subject-matter instruction in linguistics courses. For example, CT can be fostered through a problem-based learning approach (Filimonova, 2020) or a writing-intensive approach (Pappas et al., 2019) in linguistics courses. Welch and Shappeck (2020) have also identified how a signature assignment in linguistics aligns in both pedagogy and content with key competencies, among which CT is frequently particularly salient. These studies show evidence that linguistics courses provide a stimulating environment with different subject areas and a variety of activity types for students to think critically in. The findings of these studies support the position taken by McPeck (1981), who expresses the view that "thinking is always thinking about something" and that "critical thinking always manifests itself in

connection with some identifiable activity or subject area and never in isolation" (p. 5).

Research Question

Despite a growing body of research on CT in linguistics teaching and learning, scant attention has been paid to the two-way relationship between them. This study seeks to address this gap by answering the following research questions:

(i) How do undergraduate students in English Linguistics and their lecturers perceive the relationship between linguistics study and CT?
(ii) What strategies can help foster the link between linguistics study and CT as perceived by lecturers and undergraduate students in English Linguistics?

Research Methodology

Data Collection

This research was conducted in an English Linguistics and Literature undergraduate program of a large public university in Vietnam, where linguistics courses were offered in the curriculum, and CT was encouraged in its professional and dynamic learning environment. Research ethics approval was obtained from Macquarie University in Australia before the study commenced.

At the beginning of the project, invitations were sent to five lecturers who were experienced in teaching English Linguistics and all senior full-time undergraduate students who were taking an English Linguistics course in the program. Four lecturers and twelve students were able to arrange their time to take part in the study on a voluntary basis. The four lecturers (named L1 to L4) had Master's or PhD degrees in TESOL, Linguistics or Applied Linguistics, or an EdD degree, all of which had been obtained in Australia or the United States of America. Three of the lecturers participating in this study were Vietnamese faculty staff, and the other[1] was an invited foreign lecturer from a Western university. All the students (named S1 to S12) had taken some or all of the English Linguistics courses. Ten students took five out of six linguistics courses offered in the program while two students took three

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[1] The invited foreign lecturer, for whom English was a second language, started teaching English at the age of 15. They are noted as L4 (Lecturer 4) in this study.

out of six courses. Although there was variation in the number of linguistics courses taken by each student, it is believed that this difference had minimal influence on the study's results. While it is possible that the number of courses taken could have impacted the students' perception of CT in linguistics study, this difference was unlikely to be not large. All the students took the *Introduction to English Linguistics* course, which briefly covered content from other linguistics courses. In addition to the introductory course, the two students who took fewer courses participated in either *English Semantics* and *Systemic Functional Grammar* or *English Morphology and Syntax* and *Discourse Analysis*.

This study forms part of a larger research project on CT in English language teaching (ELT). In the larger project, the participants were first invited to complete a questionnaire. There were two versions of the questionnaire, one for lecturers and the other for students. The students then did two CT tasks. Following the completion of the questionnaires and the responses to the CT tasks, the students were invited to take part in follow-up semi-structured interviews. The lecturers, for their part, evaluated the students' CT task responses for evidence of CT before being invited for semi-structured interviews. The purpose of the interviews was to gain a better understanding of the data previously obtained. Each interview, which lasted about 30-45 minutes, was audio recorded to enable an accurate transcription. In the English Linguistics and Literature program where the present study was conducted, instruction was delivered primarily in English. Given the participants' adequate English competence for the research activities, all data were collected in English.

For the purposes of the current paper, responses to relevant items in the questionnaires and interviews, which seek information about the relationship between linguistics study and CT, were collated and analysed. The relevant questionnaire items solicited information about the perceptions of the definition and description of CT, examples when students' CT skills were nurtured in an English Linguistics classroom, the role of CT in the program and in linguistics courses, experiences with CT being integrated in English Linguistics teaching and learning, and the importance of English Linguistics courses in developing students' CT skills. During the interview, the participants were asked to further share their perceptions and experiences of integrating CT in English Linguistics teaching and learning. For example, the lecturers were asked questions about the need for CT in English Linguistics courses, the role of CT in their daily lesson plans, and the challenges they faced in implementing CT in the classroom. The students were asked questions about whether they needed good CT skills, what role CT had, and whether they were conscious of being a critical thinker in their linguistics study.

Data Analysis

Inductive thematic analysis (Braun & Clarke, 2006) was employed in this study. The audio recordings were transcribed, and during the analysis, triangulated through data comparison to responses to relevant questionnaire items to ensure reliability. The data were subjected to a recursive process, which involved back and forth movement as necessary, throughout six phases, namely becoming familiar with data, generating preliminary codes, looking for themes, reviewing themes, defining and labelling themes, and creating the report (Braun & Clarke, 2006). Three overarching, and often overlapping, themes formed by the combination of either different codes or sub-themes became evident: (1) the importance of CT in English Linguistics study, (2) the usefulness of English Linguistics courses for developing students' CT, and (3) how best to foster the link between linguistics study and CT.

Findings

This section reports on the main findings about the relationship between linguistics study and CT from the perspectives of both undergraduate students learning English Linguistics and their lecturers.

The Importance of CT in Learning English Linguistics

The majority of the participants (except S10) emphasised the importance of CT in the study of English Linguistics, as one typical quote reveals:

> If you don't have CT skills, you cannot learn, you cannot be a
> good learner in linguistics. (S3)

To illustrate their responses, the participants discussed various reasons why CT, in terms of skills and dispositions, was desirable in English Linguistics courses.

First, many students perceived that CT was important in English Linguistics study because it helped them understand the lessons and complete a variety of linguistics exercises, tasks and assignments, from analysing sentences, especially ambiguous sentences, and drawing tree diagrams in English Syntax to interpreting words and sentences in English Semantics, or from interpreting a certain utterance in light of situations where it was used in English Pragmatics to analysing conversations in Discourse Analysis. Many

of them could not go further in explaining why CT was needed for those exercises and assignments. Two of them, however, could explain it more clearly:

> Such analysis is to give the learner a deep understanding of sentences and their uses; if they have knowledge from analysing those sentences, they can use the language more appropriately and correctly. (S2)

> First, the teacher will give a lot of rules for me to study, but then, language has a lot of exceptions, and with those rules, we can apply to most of the cases, but to some cases, we cannot apply [them]. And with just the basic rules, we cannot analyse all of the language, so we have to think critically, and we have to do more research and discussion and then analyse the language better. (S3)

> We have to analyse the structures so we can understand the meanings of sentences, and then we can know what lies behind the basic language elements, and what are the meanings and the content behind the language. (S3)

This sub-theme, which is the necessity of CT in enhancing the understanding of linguistics and in facilitating the completion of linguistics exercises, tasks, and assignments, was brought into greater focus in the lecturers' discussions. The lecturers indicated that students needed to have CT or be trained in CT to have a good understanding of English Linguistics. The reason for this was that all the subjects were "very theoretical" for students (L3) or that linguistics (Semantics, for example) had a lot of theories, which could sometimes be "very subjective" (L2). Indeed, despite being a rigorous and scientific field, linguistics has potential sources of subjectivity. For instance, although linguists who specialise in semantics have been striving to develop systematic and rigorous methods for analysing meaning, the interpretation of meaning in a language can be influenced by a variety of factors, including language users' linguistic and cultural background, as well as their individual experiences and perspectives. This can lead to differences in how people understand and interpret the same linguistic expression, which can make semantic analysis somewhat subjective. The lecturers even emphasised that it would be "hard enough" for lecturers to "just make [students] understand the textbook" (L3), or that basically the students had to be thinking critically about everything their lecturers taught them in order to put concepts into practice (L4).

In addition, the student participants talked about other aspects of the influence of CT skills and dispositions on linguistics study, with much clearer

expression of their views. For example, they discussed the following four main points:

First, the CT skills of making judgements, interpreting and explaining, and reasoning verbally were needed when students performed correcting exercises. For example, S1 reported that in their English Syntax classes, the teacher would frequently encourage several students to write their responses on the board and then ask other students to explain why they thought a certain response to be correct or incorrect. In this way, the students had to make judgements and come up with arguments in support of their responses.

Second, the CT disposition of looking at an issue from different perspectives and the CT skill of making decisions offered an advantage for reading. One of the students (S5) said that thinking critically when reading could help students identify what was true and what was not true in articles. Another student (S6) explained that some linguistics books, such as the Morphology and Syntax coursebooks, were difficult to read because the authors did not get directly to the point from the beginning but discussed different issues and different alternative viewpoints instead. Thus, students needed to "consider the problems in different ways" when reading rather than accepting "one truth". Also, this skill and this disposition enabled students to choose what to believe from multiple sources of knowledge. For example, S12 said, "The knowledge that we learn comes from a lot of books, a lot of sources, so we will have to choose that which is believable."

Third, analysing, recognising, and making arguments was also necessary in dealing with different sources of information. For example, as one participant stated, "the teacher is also one of the sources of information, but sometimes he or she can be wrong, so we need to argue" (S12). Another participant pointed out that "in an article, the author says a, b, c, and then e and d", and students had to recognise that sequence to understand what the author meant (S7).

In addition, the quest for linguistic knowledge required students to have the CT disposition of inquisitiveness or curiosity. As S4 put it, "Being critical will keep students curious and want to know more about the subjects. When they have an inquisitive mind, they can widen their knowledge."

Some of these key aspects were emphasised and carefully explained by the lecturer participants. For example,

> I think [CT skills] help students to be more logical in their reasoning, and to avoid fallacies when arguing a point and to recognise the fallacies in other people's arguments. (L1)

> … the students may not agree with some of the points in the textbook or in the lecture, so they can raise their concern as well.… Also, because different books may talk about the same

thing differently, the students may raise a lot of questions because they say "So, which one is correct?" That is when I think you should point out that it's very important to consider something in context, for example, and so they can look at that more critically, and not just believing in what the textbook says. (L2)

CT is there from level 1. Even when [students] start the Introduction to Linguistics, their learning comes from a lot of problems that they have to analyse.… They have to have good arguments. (L4)

In sum, the majority of the participants acknowledged the crucial influence of CT on students' learning of English Linguistics. This contributes to the support for the wide-ranging effects that CT can have on students' linguistics study.

The Usefulness of English Linguistics Courses for Developing CT

The majority of the participants (except S10 and S12), through their examples and their ranking of the courses, put a lot of emphasis on the usefulness of English Linguistics courses for developing students' CT.

The participants first gave examples of when CT was nurtured in an English Linguistics classroom. The student participants' examples could be classified into two categories. The first category consisted of examples that focused on assigned exercises, tasks, and assignments, for instance the exercise of drawing tree diagrams in a Syntax class or that of analysing the transitivity of clauses in a Systemic Functional Grammar class. The second category included those examples that paid attention to classroom activities, for instance answer justification and peer feedback in exercise correction, recognition of errors in a coursebook, group discussion, and problem-solving activities. S11 gave an example:

In Semantics class, the teacher gave some questions or raised some problems, and then required my class to think and give our own opinions about those things. Since that, I learned how to think and link to my knowledge, experience, and information that I read, and told everyone about my ideas. (S11)

As for the lecturers, they wrote about classroom activities where students were asked to "agree or disagree with the suggested answers in the textbook" (L2), to compare between English and Vietnamese (L3), to "argue in favour of one structure versus another", and to "provide arguments" (L4). Two of the lecturers were very explicit in stating that

> In my Semantics class, when my students learn the politeness principle and the relationship between politeness and indirectness, I usually ask them whether "Would you like to come in?" or "Come on in" is more polite. I also ask them to think of directness in Vietnamese in comparison with English and whether Vietnamese is less polite than English. The comparison between English and Vietnamese can be culturally thought-provoking for my students. (L3)

> Definitely, definitely, … the students will learn to be critical also in linguistics…. The students have to evaluate arguments, so you know, we give them linguistic arguments.… (L4)

The participants ranked English Linguistics courses offered in the program in the order of importance for developing students' CT skills. According to the student participants' responses, *Introduction to English Linguistics* and *English Phonetics and Phonology* were generally ranked the lowest while *Semantics (which included English Pragmatics)*, *Systemic Functional Grammar* and *Discourse Analysis* were generally ranked the highest. The ranking of *English Morphology and Syntax* somewhat varied, from the most important to the least important, but was mostly positioned at the middle level.

Introduction to English Linguistics was ranked the lowest because it was the very first linguistic course introducing students to basic linguistic concepts, theories, and practice. Notably, however, S7 ranked this course the highest, explaining that it was "the fundamental course for all [English major] students to explore more in linguistics". They added that promoting CT in this course would not only "help students in the learning process but also boost their CT skills and synthesising skills". *English Phonetics and Phonology* was ranked the lowest for the following reasons: learning how to produce sounds and practising transcribing words did not contribute much to the development of an ability to judge, phonetic and phonological rules were quite clear and unchangeable, and the study of sounds was "less controversial".

By contrast, *Semantics*, *Systemic Functional Grammar*, and *Discourse Analysis* were generally the highest ranked courses for the following reasons:

> English Semantics is the subject where I learn how to analyse the meanings. This depends on different situations, people, countries, and cultures. (S11)

> [For Systemic Functional Grammar], the teacher did not follow … the main course materials. He taught with his understandings and pointed out how they were different and more reasonable compared to those of the books.… It gave us

a chance to compare between what he taught and what was written in the books. (S12)

As for Discourse Analysis, which is an inter-disciplinary area of research, there are various schools of thought. Learners need CT skills to understand, question and apply knowledge from this field. (S9)

The lecturers' opinions, which were mixed, shared several fundamental similarities with the students'. L1 ranked *English Morphology and Syntax*, which "require a great deal of analysis", the highest, and *English Phonetics and Phonology*, which "put more emphasis on description than analysis", the lowest. L2 ranked *Discourse Analysis* the highest because it was "an advanced course for senior students", and *Introduction to English Linguistics* the lowest because it was "a foundation course". The opinions of L3, who took account of students' motivation in addition to the course content, stood in contrast to L2's. L3 believed that among the three linguistics courses that they taught, *Introduction to English Linguistics* was the most important for developing CT skills while *Discourse Analysis* was the least important. They commented:

> [Introduction to English Linguistics] is covering a wide range of issues with comparison of different languages in the world. Also, this course is for juniors at my school, and they are still eager to learn. (L3)

> [Discourse Analysis] is very theoretical, to cover what is in the course material is hard enough. It is possible if teachers can integrate CT skills in their lesson plans. This course is for seniors, so they have lost some of their zest for learning and most of the time they try to cope with the course while doing some part-time job. (L3)

However, according to L4, these courses could not be ranked and should equally develop CT because all of them dealt with data. They explained that linguistics was a "data-driven science", and CT in linguistics meant "data solving" and "data analysis". As they put it:

> Linguistics is a science and should be taught as a "discovery" process for students.… All courses ought to develop CT as they apply the new concepts (as opposed to repeat concepts). (L4)

Strategies to Foster the Link between Linguistics Study and CT

The participants suggested a few strategies to foster the link between linguistics study and CT, among which the two most notable types were problem-solving tasks and open-ended questions.

First, the development of CT was linked to an emphasis on problem-solving tasks. L1 noted that a problem-solving assignment resembled a mathematics problem and recalled that when they studied linguistics in Australia, obvious assignments bore resemblance to problems that required solving. Some student participants, for example S11, reported that the linguistic problems that their lecturers raised in class enabled students to think critically and connect linguistic knowledge in different areas of investigation to sources of data, their personal experiences, their beliefs, and their prior knowledge to come up with sensible answers.

The lecturers focused on the design and use of problem-solving tasks in English Linguistics classes. One of the lecturers (L4), who was highly experienced in designing and giving students problem-solving tasks in their linguistics courses, shared helpful ways for dealing with these issues. According to the lecturer, there were two ways to teach linguistics: The first way was "to teach ABC, repeat ABC", and the second way was that "you teach ABC, or even better, have [students] discover ABC, and then apply ABC to data where they need to pick, okay, it's an A, it's a B, it's a C." This lecturer stated that it was lecturers' responsibility to find and provide students with data to think about. In their case, they obtained data from books written in different languages, and their approach was to select a book, examine the data, and then create a problem based on that data. On occasion, while reading a journal article, they found data that could be adapted into good problems for their students. The reason why they did not use the solution in the article was that it was deemed too advanced for their purposes, but they encouraged their students to experiment with the data and discover their own potential solutions. This lecturer noted that problems assigned to students should require answers that could not be readily obtained from the Internet. Additionally, since students were expected to argue for and against various possibilities to arrive at the most optimal analysis, they should be taught principles of argument construction and styles of argumentation beforehand.

In the Vietnamese tertiary context, when asked about the possibility that problem-solving tasks might lead to low scores among students, a lecturer commented,

> At the beginning, yes, but we need to sacrifice something [i.e., high scores] in order to help students in the long-term way. I think at the beginning, they will suffer something, but then they will get used to it and make progress and will be better in CT. (L1)

Another strategy for fostering the link between linguistics study and CT was an emphasis on open-ended questions. According to the participants, open-ended questions could exist in various forms. They could be questions that students asked themselves when reading linguistics books or listening to others or questions that they asked their lecturers and their classmates during group or class discussions. They could also be questions that lecturers raised during their lectures or assigned as tasks for group discussions and written assignments. For example, L3 encouraged students to ask questions regarding what they had read or what was going on in class. In a different way, L2 explained,

> … normally, you should ask students not just, for example, true or false, but why true, why false. Or if they provide an answer, then "Why do you think this is the best answer?", for example. So I think if you keep asking why, then they have to think. (L2)

As seemingly different as open-ended questions might be from problem-solving tasks in terms of types of exercise or activity, these questions were, as demonstrated in the lecturers' and students' responses, actually a technique that could be used to scaffold students' CT learning and assist them to deal with their problem-solving tasks. Students in L2's English Linguistics classes did not have to agree with everything: L2 normally encouraged their students to "disagree with something" as they believed this teaching approach was more favorable to the students. Additionally, they held the view that the use of open-ended questions in exercises and activities would aid students in voicing their opinions. However, as lecturers encouraged students to ask numerous questions, they had to be prepared to answer those questions as well, which could pose a challenge for teachers at times (L2):

> … because you cannot prepare everything, because it depends on what the students say, and what the answers or the questions are. But I think if you know enough about the field and about the theory, then you will be able to answer the questions. (L2)

Overall, the suggestions provided by the participants offer valuable insights into how the link between linguistics study and CT can be fostered: Engaging in problem-solving tasks and exploring open-ended questions could provide opportunities for students to enhance their CT abilities, potentially deepen their knowledge of linguistics, and thereby establish a stronger connection between the study of linguistics and CT. When asked questions about strategies to foster the link between linguistics and CT, the participants were not told about the importance of making this link explicit,

in order to prevent potential bias in their responses. However, their responses demonstrated a clear awareness of this importance. Had the importance of making this link explicit been emphasised, it seems probable that the participants would have offered additional strategies.

Discussion

This paper has reported on an exploratory study about the perceptions of undergraduate students and lecturers in English Linguistics regarding the link between linguistics study and CT. The first set of findings is about the extent to which students in these courses needed good CT skills, and the second set is about the extent to which English Linguistics courses developed students' CT skills. If we put these two sets of findings side by side, it is interesting to note that frequent similarities, overlaps, and even combinations can be found between the examples, explanations, and comments provided as evidence to support the participants' viewpoints on the two issues. This suggests an intimate link between linguistics study and CT. In other words, examining the importance of CT in learning English Linguistics is one way to look at the link, and investigating the usefulness of English Linguistics courses in developing CT is an alternative way to look at it. Such a strong link could be attributed to the nature of linguistics as a science as noted above by one of the lecturers. The following argument from Crystal (2005) provides further clarification on the inseparability of linguistics study and CT:

> Linguistics shares with other sciences a concern to be objective, systematic, consistent, and explicit in its account of language. Like other sciences, it aims to collect data, test hypotheses, devise models, and construct theories. Its subject matter, however, is unique: at one extreme it overlaps with such 'hard' sciences as physics and anatomy; at the other, it involves such traditional 'arts' subjects as philosophy and literary criticism. (Crystal, 2005, p. 481)

Extending the existing literature, the first set of findings shows multiple dimensions by which CT is important to linguistics study. To return to the CT skills and dispositions that Davies (2015) compiled to create a model of CT in higher education, although not all of them were specifically mentioned in the participants' discussions, many of the skills and dispositions could be clearly identified. What is interesting to note is that these skills and dispositions took on additional dimensions, which were particularly emphasised in linguistics study, when being viewed in different contexts of linguistics teaching and learning and seen through different 'prisms' of the

discipline. For instance, the immersion in a topic area in linguistics requires a competent but questioning understanding of different theories; doing linguistics exercises and assignments involves taking a position on the topics and their related theories.

The second set of findings provides important insights into the usefulness of English Linguistics courses in developing CT. First, the participants' responses confirmed that linguistics courses could provide a good environment for students to practice thinking critically in. This finding lends support to Hadley and Boon's (2023) assertion that CT is initially triggered through our interaction with and creation of language, followed by the training of individuals to question assumptions and conclusions in a more deliberate and purposeful manner. Linguistics, as the study of human language, offers students taking linguistics courses abundant opportunities for language interaction and creation. In learning linguistics, students often engage extensively with assumptions, arguments, claims, evidence and inferences. To illustrate this point, *The study of language* by Yule (2017), a textbook designed for beginners' introductory linguistics courses, presents numerous examples that underscore this aspect [emphases added]:

> When we use a referring expression like *this*, *he* or *Jennifer*, we usually assume that our listeners can recognize which referent is intended. In a more general way, we design our linguistic messages on the basis of large-scale ***assumptions*** about what our listeners already know. (p. 373)

> English is not the official language of the United States, but some insist that it should be. What are the ***arguments*** for and against the "English-Only Movement"? (p. 695)

> It has been ***claimed*** that "recursion" is a key property of human language, and of human cognition in general. What is recursion? Could it still be a universal property of human language if one language was discovered that had no ***evidence*** of recursion in its structure? (p. 81)

> Based on this (rather slim) ***evidence***, would you say that the difference is phonemic or allophonic? (p. 154)

> What kind of ***inference*** is involved in interpreting each of these utterances? (p. 379)

Second, the responses also indicated, though not as clearly as in the previous finding, that the courses enabled students to use language properly to express their thoughts, thus contributing to the development of CT. In fact, linguistics courses provide students with the tools to analyse language,

to understand how it works and to make informed judgements about acceptability in ambiguous scenarios or doubtful cases. This not only helps students have better use of language, which is "the demonstration of the learner to think critically" or "the 'surface structure' of the spoken or printed sentences", but also enhances their CT (Sharma, 1995, p. 35). For instance, as a first step in helping students understand the equivocation fallacy, Hadley and Boon (2023) introduce the concept of homonyms, a topic typically taught in Semantics courses. These scholars highlight how using a word in a different way can result in unclear arguments or lead to faulty conclusions. It may be due to these reasons that in their article "Why major in linguistics (and what does a linguist do)?", Macaulay and Syrett (n.d.) highlight that linguistics majors gain valuable intellectual skills, including analytical reasoning, critical thinking, argumentation, and clarity of expression.

In addition, the participants' rankings of English Linguistics courses and the reasons behind their high and low rankings can serve as a reference point and practical guide for both lecturers looking to integrate CT into their courses and students interested in monitoring and improving their learning behaviours. Careful consideration of various program elements is essential for ensuring effective implementation. Although there might be several explanations for the differences in the rankings of the participants, four explanations that emerged most clearly from the findings were course content, lecturer instruction, student motivation, and the participants' subjective perceptions. The element of subjectivity, which is inevitable, should also be taken into proper account in the teaching and learning of linguistics. As noted by one linguist:

> What happens in phonology, and why, seems to me less mysterious than what happens in syntax (a field that I know less about), and much less mysterious than what happens in morphology (a field that I know more about but still do not understand well). That is a subjective reaction. (Carstairs-McCarthy, 2011, p. 25)

The third significant set of findings relates to how problem-solving tasks and open-ended questions can be instrumental in moving lecturers towards productively integrating CT into English Linguistics courses and in moving students towards thinking critically in their studies. While the lecturers and the students in this study did not delve deeply into the specifics of these instructional strategies, particularly those related to questioning techniques, their suggestions have paved the way for further elaboration on the strategies. This elaboration could help significantly enhance the pedagogical approach to linguistics teaching and learning.

Problem-solving tasks are tasks that require students to identify the nature of problems and analyse them to propose potential solutions (D'Amore, 2015). It would be helpful for students in linguistics courses to be engaged in problem-solving tasks or for much of the work involved in learning linguistics to be accomplished by solving problem sets. Phonology problem sets, for example, may involve looking at relatively raw data that demonstrate a certain pattern of alternation. What students need to do is to identify the basic regularities in the data and examine their analytical and theoretical consequences. According to The Derek Bok Center for Teaching and Learning (n.d.), problem set questions typically serve two key functions. The first key function is to provide students with an opportunity to practice applying skills and concepts taught in class across a range of contexts. This may involve asking questions that require students to consider how a particular concept can be used in response to different circumstances or how a skill can be employed to produce diverse kinds of answers. The second key function of problem set questions is to synthesise multiple skills and concepts into complex and engaging questions. These questions tend to be intellectually stimulating and internally motivating for students, highlighting the strengths of the discipline. It is important to note that while CT is not equivalent to problem-solving, it can be "actualized *through* problem-solving" (Hadley & Boon, 2023, p. 26). To engage students in problem-solving tasks in linguistics courses, lecturers may use problem sets provided in course books or design their own problem sets. A crucial step in designing meaningful and effective problem sets for a linguistics course is to identify linguistic data that aligns with course objectives. Linguistic data may come from many sources, such as corpora, speech recordings, language acquisition studies, or experimental data.

Open-ended questions, on the other hand, encourage students to move beyond surface-level understanding and delve into intricate complexities (Elder & Paul, 1998). These questions require more than a simple "yes" or "no" answer and serve as the driving force for thinking, as they define tasks, articulate problems, and delineate issues (Elder & Paul, 2016). Elder and Paul (2016) categorise essential questions into two main types: analytic questions, which examine thinking components, and evaluative questions, which involve evaluation or assessment. Analytic questions can be further divided into three kinds, depending on the type of reasoning required: no system questions (calling for a subjective opinion), one system questions (with one definitive answer based on evidence and reasoning within a system), and multi-system questions (with multiple competing viewpoints, resulting in better and worse answers). Evaluative questions, on the other hand, can be further categorised into two kinds: one system questions and multi-system questions. This type of questioning does not include questions of preference.

In linguistics teaching and learning, all three kinds of questions – no system, one system, and multi-system questions – are important. However, multi-system questions are particularly useful as in linguistics, varying theories or multiple perspectives abound. These questions facilitate a deeper understanding by exploring different viewpoints and their implications, thereby nurturing greater CT among students. According to Elder and Paul (2016), questioning in decision-making and problem-solving is part of analytic questioning. Consequently, the problem set questions previously discussed in this section can be viewed as a subset of analytic questioning.

Across the two main types of essential questions – analytic questions and evaluative questions, students can deepen their understanding of a discipline by asking questions about its fundamental logic, status, and essence, and by applying the elements of reasoning to their questioning (Elder & Paul, 2016). In the field of linguistics, students may ask various types of questions, including descriptive questions, comparative questions, theoretical questions, functional questions, historical questions, and sociolinguistic questions, as examples.

This final set of findings sheds some light on what underlines the reflections on practice by Bauer (2011) and Chung (2011), among other teacher-scholars who contributed valuable ideas about teaching linguistics subjects in Kuiper (2011). Reflecting on his experience of teaching morphology, Bauer (2011) emphasised that English morphology provides ample data for training students in various problems of morphological analysis. Chung (2011), in relation to teaching syntax, found it helpful to guide students "through a combination of structured problem sets and Socratic interaction in the classroom" (p. 36). As she described,

> Instead, the instructor provides a problem set which students solve outside of class, either alone or – better – collaborating with one another. Students write up their solutions in essay-style format and submit them at the beginning of the next class. Class time is devoted to discussion of their solutions, with the instructors guiding students to assess the merits of each solution and settle on one solution as superior. (Chung, 2011, p. 36)

These findings also help us understand why Fromkin et al. (2018, p. xvi) state that they "have provided many new exercises and problem sets in this [revised] edition so that students can apply their knowledge of linguistic concepts to novel data" and that they have added "more research-oriented exercises … for those instructors who wish their students to pursue certain topics more deeply". As these exercises are very important for students learning linguistics, they should not be ignored, as may often be the case. On

the contrary, they should receive careful attention in the teaching of this discipline.

Conclusion

This paper set out to show how CT benefits and animates English Linguistics courses and, in return, how these courses can foster students' CT. Addressing this aim, the study's findings have made explicit the strong link between linguistics study and CT, which was perceived by English Linguistics students and their lecturers to be manifested in various linguistics exercises, assignments and teaching/learning activities. One limitation of the study is its small scale. However, the evidence it provides adequately suggests that if English Linguistics courses are to be taught and learned in an effective way, then the influence of CT on students' learning and the contribution of these courses to students' CT development appear to be two different ways of looking at the same issue or, in other words, "two sides of the same coin". While it may be true that there is no one right way to integrate CT into English Linguistics courses, the use of problem-solving tasks and open-ended questions have been suggested to enable English Linguistics students to become better linguistics learners and more competent critical thinkers. It is hoped that this study will make a useful contribution to considerations of teaching and learning in the discipline of linguistics in general and in English Linguistics in particular.

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About the Authors

Nu Anh Vo: A senior lecturer and Associate Dean at the Faculty of English Linguistics and Literature, University of Social Sciences and Humanities (Vietnam National University Ho Chi Minh City). She obtained her PhD in Applied Linguistics at Macquarie University, Australia. Her teaching and research interests focus on English Linguistics, language teaching and

learning, discourse analysis, critical thinking, and international comparative education.

Stephen H. Moore: An Honorary Associate Professor in the Linguistics Department at Macquarie University, Australia. His teaching and research focus mainly on discourse and language for specific purposes.

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