



## Research Article

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# “I usually just rely on my intuition and go from there.” pedagogical rules and metalinguistic awareness of pre-service EFL teachers

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**Abstract:** The present study explores Austrian pre-service EFL teachers' language awareness. The negative polarity properties of 'any' are investigated. These are informative since some of the grammatical constraints are taught in EFL instruction while others are not. The research question addresses whether pre-service teachers' knowledge is constrained by pedagogical rules. 66 pre-service EFL teachers rated eight sentence types illustrating varying grammatical constraints on the occurrence of 'any' by means of paced acceptability judgement. Then knowledge of metalinguistic was assessed through untimed sentence pair assessment, open rule verbalisation, and recall of rule teaching. Results suggest that ability to distinguish grammaticality as indexed by judgements was generally high but most robust for taught properties. Metalinguistic knowledge was similarly restricted mainly to the taught pedagogical rules. Based on these results, ramifications for the role of language knowledge in EFL teacher training and avenues for further research are discussed.

**Keywords:** grammar; metalinguistic awareness; pedagogical rule; teacher language awareness

## 1 Introduction

Long-standing debates have explored and contested the relationship between proficiency and metalinguistic knowledge in second language acquisition (SLA) (e.g.

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Dekeyser 2003; Ellis 2015, 2008a, inter alia). Analogous discussion concerns the nature and relative importance of language proficiency and metalinguistic knowledge of language teachers, in both L1 and L2 teaching contexts (e.g. Andrews 1999; Borg 1999; Nygård and Brøseth 2021; van Rijt 2020).

Pre-service EFL teachers (PST) provide a particularly interesting case-study at the intersection of these debates, as PST are advanced-proficiency learners of their L2 and at the same time novice teachers of that L2. The extent to which they have mastered the L2 implicitly and have gained explicit metalinguistic knowledge of the L2 are each key components of teacher language awareness, which ultimately impacts upon their effectiveness as teaching professionals (Andrews 2007).

In the present study, we explore this intersection of teacher language awareness by focussing on the distribution of the existential quantifier *any*. This provides an interesting test case because there are pedagogical rules of thumb standardly provided in EFL instruction which underdetermine or conflict with the true linguistic properties which constrain the distribution of the item (Berry 2015; Gil et al. 2019; Marsden et al. 2018). Exploring PSTs' knowledge in this area therefore sheds light on the extent to which future teachers' awareness is conditioned by pedagogical rules, or whether PSTs have developed a broader awareness of linguistic issues relevant to the distribution of *any*-forms.

To pursue these issues, we first discuss the components of what Andrews (2007) termed teacher language awareness (TLA). This involves reviewing results from studies on metalinguistic knowledge and L2 proficiency of language teachers. We then discuss the pedagogical and linguistic rules for the quantifier *any* in English. Finally, we present the methodology, discuss the results, and conclude with ramifications for EFL teacher training, in particular the role of language awareness as a component of teacher cognitions.

## 2 Metalinguistic knowledge and L2 teacher language awareness

There is a history of controversy with respect to metalinguistic knowledge in language education, resulting in “grammar wars” in L1 literacy education (e.g. Locke 2010) and questions about the value of explicit knowledge in L2 teaching (e.g. Roehr-Brackin 2018). However, in contrast to the controversy surrounding potential effects of metalinguistic knowledge for language *learners*, there is general agreement that a high level of metalinguistic awareness is useful for L2 *teachers*. Wright and Bolitho (1993) propose that language awareness is at the centre of three related competences of language teachers in their roles as (a) language users, (b) language analysts, as well

as (c) teachers. Lantolf (2009: 271) similarly emphasises that “explicit systematic knowledge of the language as a semiotic tool” is as important as teachers’ proficiency in the L2. In his view, teacher-training study programmes should therefore include intensive and extensive systematic study of the L2 in addition to proficiency development and pedagogy.

Such claims for the importance and relevance of metalinguistic knowledge can be understood as a component of the concept of TLA (Andrews 2007). Andrews’ formulation goes beyond a static notion of declarative knowledge about language, encompassing broader issues relevant to teaching practice. In addition to metalinguistic knowledge, TLA includes, for instance, teachers’ strategic competence as well as their knowledge of the level of development of their learners’ interlanguage (Andrews 2007: 30–31). As such, it aids teachers in planning, modifying input, adapting materials, and responding to learner questions and needs appropriately.

The present study focuses specifically on metalinguistic knowledge about one particular grammatical paradigm. However, as acknowledged in Andrews’ model, such knowledge is just one important component of TLA. It does not by itself translate directly into effective pedagogical practice as there are additional contextual and attitudinal factors, as well as further facets of pedagogical content knowledge which will impinge upon choices teachers make. What is more, our narrow focus on linguistic rules in the investigation of teacher knowledge does not imply that metalinguistic knowledge should be transmitted to learners. Whether and how to teach grammar can only be decided by balancing the full range of contextual, curricular and attitudinal constraints in particular settings. Nevertheless, “it is important for the L2 teacher to possess a high level of metalinguistic knowledge of grammar *whether or not that teacher believes in the value of learners’ developing such knowledge*” (Andrews 2007: 16, emphasis added). Recent research shows that trainee teachers do not necessarily have highly developed metalinguistic knowledge, at least in L1 education. They may experience difficulties reasoning about grammar and show some conceptual confusion about grammatical categories and analysis (Nygård and Brøseth 2021; van Rijt et al. 2021).

Previous studies of EFL teachers’ metalinguistic knowledge also indicate variable effects, both for pre-service and in-service teachers (IST). Andrews (1999), for instance, investigated IST and PST’s ability to identify grammatical categories and grammatical functions in sentences, to use grammatical terminology to describe particular features, and to identify, correct and explain grammatical errors in sentences. He compared English IST and PST in Hong Kong, for whom English was an L2, with PST whose native language was English. The native speakers were further subdivided according to their tertiary education background: English Studies versus Modern Foreign Languages. This permitted exploration of effects of

L1/L2 status as well as educational background because the Modern Language group of native English speakers were also L2 learners of a different language. It was found that all groups performed almost at ceiling on error identification and correction, which Andrews (1999: 153) suggests is more a test of proficiency than metalinguistic knowledge. By contrast, the ability to explain the violation of grammatical rules, and the use of terminology to identify categories and functions were less robust across the board. There were, however, significant differences between the groups, with the L2 IST performing best and the native-speaking PST performing worst. This suggests that there are effects of exposure to explicit instruction in a foreign language, given that native speakers who had studied Modern Languages had a more developed metalinguistic ability. And it suggests some effect of teaching experience, given that in-service L2 teachers performed better than pre-service teachers.

Erlam et al. (2009) adapted the same testing methodology as Andrews, focussing just on L1/L2 status. They compared English L1 TESOL student teachers with Malaysian TESOL student teachers, for whom English was an L2. The assumption was that there may be a lower level of grammatical knowledge among teacher trainees who have English as a native language because grammar is not generally taught in mother tongue language classes. PST with L2 English, in contrast, would more likely have been exposed to explicit grammatical instruction in the course of their language learning experience. The results do indeed point to differences between the L1 and L2 groups. While they perform similarly on the tasks which require identifying grammatical features in sentences, and on the ability use grammatical terminology, the L2 teacher group are significantly better at formulating rules to explain ungrammatical sentence structures.

These studies exploring metalinguistic knowledge of a range of morphosyntactic properties found that (prospective) English teachers have variable levels of knowledge about grammar, and that explicit grammar instruction seems to have an effect given that L2 English-speakers have a more developed level of metalinguistic knowledge, due to this group having themselves been explicitly taught grammar. We explore this further by investigating a case where the pedagogical rules provided in typical explicit grammar instruction conflict with the real linguistic distribution, as is the case with the distribution of the existential quantifier *any*. PSTs' awareness about this distribution sheds light the nature of their grammatical knowledge and whether they generalise beyond pedagogical rules of thumb. In turn, such a capacity to adequately deduce more complex rules from simplified and abbreviated pedagogical descriptions (Swan 1994) would constitute an indispensable prerequisite for effective L2 pedagogy.

### 3 Pedagogical and linguistic rules – learning and teaching *any* in L2 English

The existential quantifier *any* (and its compounds *anyone*, *anything*, etc.) is a negative polarity item (NPI) in English (see Giannakidou 2011; Penka and Zeijlstra 2010 for outlines of the extensive analyses in the linguistics literature). NPIs such as *any*, *ever*, *yet* require a negative grammatical environment, otherwise their occurrence is ungrammatical, as illustrated in (1–2).<sup>1</sup>

- (1) a. I have not read any books.  
b. \*I have read any books.
- (2) a. I have not read the book yet.  
b. \*I have read the book yet.

A negative environment can most basically be characterised as the presence of the negator *not*, or other overt negative elements.<sup>2</sup> The mere presence of negation does not license an NPI: it must occur within the scope of negation. A clause containing negation, where *any* falls outside the scope of the negator, is ungrammatical (see 3).

- (3) a. No one met anyone.  
b. \*Anyone met no one.

The necessary contribution of negation may also come from the semantics of other elements such as verbs and adverbs which introduce a negative implicature. *Any* is licensed in complements of a semantically negative verb (*deny*, *regret*, etc.) or in the scope of semantically negative adverbs (*barely*, *hardly*, etc.), as in (4) and (5), adapted from Gil et al. (2019: 221).

- (4) a. John regrets that he ate anything at the party.  
b. \*John thinks that he ate anything at the party.
- (5) a. John hardly ate anything at the party.  
b. \*John probably ate anything at the party.

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<sup>1</sup> *Any* has another use as a free choice item (FCI), which does not need negation to be grammatical. We leave this issue aside to focus on the NPI structures as these are the core cases covered by the pedagogical rule.

<sup>2</sup> There are many complications related to how exactly a negative environment should be semantically characterised (see Giannakidou 2011). While relevant to semantic theory, these are not specifically relevant for questions of teaching and learning of pedagogical rules. The crucial point is that the behaviour of *any* is more complex than depicted in instructional materials.

The typical pedagogical rules provided in EFL teaching underdetermine this distribution. The pedagogical rule customarily presents *any* and *some* as discrete choices depending on the type of clause: *any* is used in questions and negative declaratives; *some* is used in positive declaratives (e.g. Berry 2015: 23). Investigations of teaching materials document this. Marden et al.'s (2018) survey of online EFL teaching materials identifies this *some/any* distinction in questions/negation version affirmative declaratives as the most frequently presented rule. Additional information is presented as lexically specific exceptions, for example *any* collocating with specific adverbs, or occurring in conditionals. Gil et al. (2019) identify the same pattern from analysis of international EFL textbooks. Tesch (1990) finds similar patterns in EFL materials aimed at German-speaking learners, showing that textbook rules and exemplification focus on occurrences of *any* with negation and in questions, which does not reflect the wider distribution in a corpus of spoken English (although Tesch includes free-choice usages, which we exclude).

In order to confirm that these findings apply to EFL teaching in Austria, an analysis of all EFL coursebooks approved for Austrian secondary school education in 2021/22 was undertaken. In this way, it is possible to ascertain how likely it is that the participants in the present study have been exposed to such pedagogical rules during their L2 English instruction. Overall, 97 books were examined, 46 for lower and 51 for upper secondary school education. The polarity item *any* featured as a grammar topic in 14 schoolbooks, ten in lower and four in upper secondary school education. Straightforward rules of the form discussed above occurred in 7 books, all revolving around questions and negation, and only 5 out of these 7 books also contained illustrative examples; exceptions to rules for clarification were not present. While metalinguistic rules for questions and negation occur in six schoolbooks, negative adverbs and negative verbs are not mentioned in the materials. In the most widely used Austrian lower secondary schoolbook *More* (Gerngross et al. 2017), grammar rules for *any* are mentioned only once, contrasted with *some*. It is stated that *some* is used for things which you can count, and which are present, while *any* is used for things that are absent.

In addition to school textbook exposure to the grammar of *any*, the PSTs in the present study had all taken one course on “Advanced Grammar” as part of their undergraduate study programme. The coursebook used (Swan and Walter 2015) includes discussion of the *some* and *any* contrast. In addition to the typical negative/question rule, these materials do in fact briefly mention negative verb and adverb licensors. This topic does not, however, feature on the curriculum of the course, which focusses exclusively on tense, aspect and modality. In sum, it seems reasonable to assume that Austrian PSTs will likely only have been taught the typical pedagogical rule of thumb involving negation and questions.

**Table 1:** Mean accuracy of acceptability judgement tasks by sentence type, adapted from Marsden et al. (2018) and Gil et al. (2019).

Sentence type	Grammaticality	Taught	Samples		
			Learner		Speaker
			L1 Arabic ( <i>n</i> = 25)	L1 Chinese ( <i>n</i> = 22)	L1 English ( <i>n</i> = 15)
(1) Question	Grammatical	Yes	3.84	3.86	3.93
(2) Declarative	Ungrammatical	Yes	3.08	2.86	3.73
(3) Negative declarative scope	Grammatical	No	3.68	3.91	4.00
(4) Declarative outside scope	Ungrammatical	No	2.32	2.68	3.87
(5) Negative main verb	Grammatical	No	2.88	2.23	3.73
(6) Non-factive main verb	Ungrammatical	No	2.12	2.09	3.60
(7) Negative adverb	Grammatical	No	2.92	3.36	3.93
(8) Possibility adverb	Ungrammatical	No	2.52	2.41	3.73

Marsden et al. (2018) and Gil et al. (2019) used a paced acceptability judgement task (AJT) to test, among other things, potential effects of such teaching on learner knowledge. L1 Arabic-speaking and L1 Chinese-speaking learners of English participated in this research. A signature of learners' reliance on the taught pedagogical rules of thumb would be rejection of *any* in adverb and verb conditions, as these are on the surface affirmative declarative sentences which superficially break the pedagogical rule. Learners may also be led to accept ungrammatical declaratives where negation is present because this superficially conforms to the rule, even if the scope properties disallow *any*, which is not taught either.

Table 1 summarises all eight AJT sentence types along with the mean accuracy of the ratings from Marsden et al. (2018, Arabic L2 speakers, English L1 speakers) and Gil et al. (2019, Chinese L2 speakers).

These results are consistent with effects of instruction involving the pedagogical rule. Acceptability judgements are markedly less consistent on those types of sentences which are not standardly covered in pedagogical materials. Recall, however, that the AJT was paced, providing limited opportunity for metalinguistic reflection. So, if there is an effect of teaching, the rule may have become automatised to some extent, resulting in the patterns of acceptability judgements. This is the analysis pursued by Marsden et al. Their task included a follow-up question, asking participants to provide the grammar rule for when *any* can or cannot be used. This was

coded as “correct” when the response reflected the pedagogical rule and “incorrect” where the response included information irrelevant to the distribution of *any*. Only nine of 86 participants provided the “correct” pedagogical rule; 10 provided an irrelevant rule while the vast majority indicated that they had not been taught a rule. Given the significantly better performance on taught properties in the judgement task, Marsden et al. propose that the apparent lack of explicit knowledge reflects automatization.

In the present study, Marsden et al. (2018) is replicated and extended. The same AJT materials are used while exploration of explicit rule knowledge is expanded with additional data and closer analysis of rule recollection, rule formulation and untimed sentence comparisons. Participants in the present study are advanced learners of L2 English training to become teachers of English as a foreign language. As components of teacher language awareness, it is therefore interesting to explore both their proficiency as measured by timed judgement, as well as their ability to formulate metalinguistic rules. Finally, it is interesting to relate these measures to each other. Recall that previous studies have found that L2 EFL teachers tend to have more developed metalinguistic knowledge compared to L1 EFL teachers, as a result presumably of having been exposed to explicit English grammar themselves. However, as Berry (2015: 16) observes, tertiary-level L2 students are often “full of explicit knowledge about English grammar” but “there is a big discrepancy between this explicit knowledge and what might be called the grammatical ‘reality’”. In order to contribute to a more comprehensive understanding of the nature of PSTs’ metalinguistic awareness, it is necessary to explore whether they simply reproduce taught rules of thumb, or whether they can go beyond such taught knowledge to demonstrate a higher level of metalinguistic awareness.

## 4 The study

### 4.1 Participants

66 PSTs (mean age 22.48 years, SD 3.29) from an Austrian ELT university teacher-training programme participated in the present study. 54 identified as female, 11 as male, and 1 as non-binary. All participants took part voluntarily, anonymously, and with explicit consent, but without any financial remuneration. Data collection and analysis procedures were approved and funded by all institutions involved, and ethical and institutional guidelines regarding the rights of research participants, in keeping with the APA Ethics Code Standard (American Psychological Association 2017), were adhered to at all times.



At the time of testing, participants had advanced proficiency in English as measured by in-house proficiency tests (approximately C1 according to the Common European Framework of Reference, Council of Europe 2001). During their study programme, participants had been exposed to explicit teaching about English grammar in only one specific course (explained above). In addition, they had completed courses on proficiency development, EFL pedagogy, linguistics, and English literature and culture.

## 4.2 Materials and procedure

The study comprised two experiments adapting and extending Marsden et al. (2018), administered online through SoSciSurvey (Leiner 2021). The first included acceptability judgement on sentence types illustrated in Table 1, with 24 randomised test items in a Latin Square design, eliciting responses on a four-point Likert scale. These judgements were time limited with the aim to elicit automatic judgements not involving metalinguistic reflection. All items and fillers can be found at <https://osf.io/7wg6f/>. In the second experiment, participants completed three tasks designed to elicit metalinguistic knowledge, as summarised in Table 2.<sup>3</sup>

In the first task, participants were prompted to recall whether they had been taught grammar rules around *any*. The sentence pair rating task was designed to focus on metalinguistic knowledge with respect to cases which are not typically taught. These mirrored sentence structures presented in the AJT in experiment 1. However, in the metalinguistic task, ratings were untimed and based on comparison between two minimally different sentences. This was intended to enable participants to analyse grammatical and ungrammatical sentences. In this way, participants had the opportunity to access and apply rules, or to employ linguistic reasoning abilities in order to come to a judgment. The final task elicited open rule verbalisation. Here, participants were prompted to provide all the rule knowledge they possessed in any possible form. The purpose of the task was to elicit knowledge that might reflect the pedagogical rules, or which might extend beyond those rules of thumb.

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<sup>3</sup> An anonymous reviewer rightly points to a methodological issue in the sentence-pair rating task. The lack of a “neither acceptable” option may lead to overacceptance of the structures in cases where participants might in fact naturally assume that none of the sentences are acceptable. Unfortunately, this oversight can no longer be addressed. The aim was to focus on acceptability of the untaught types of sentences, providing opportunities to explicitly reflect on the abstract properties licensing *any*. A “neither acceptable” option would have been informative about the acquisition of these properties.

**Table 2:** The three metalinguistic knowledge tasks.

Task	Prompt	Reply options	Measure
1 Recall of rule teaching	<i>Have you been taught the grammar rules for when you can or cannot use the word “any” in English?</i>	Yes	r Single choice
		No	r
		Yes, no memory	r
		No memory	r
2 Sentence pair rating  Verb licensor	<i>Please rate, if in the following sentence pairs both sentences are acceptable or just a) or b). Tick the appropriate box.</i>  a) <i>I think I told anyone about this.</i>  b) <i>I regret I told anyone about this.</i>	Both acceptable	r Single choice
		Only	r
		a) acceptable	r
		Only	r
		b) acceptable	r
		Both acceptable	r
Adverb licensor	a) <i>I rarely say anything at meetings.</i>  b) <i>I probably say anything at meetings.</i>	Both acceptable	r Single choice
		Only	r
		a) acceptable	r
		Only	r
3 Free rule verbalisation	<i>Provide a brief summary of rules that apply to the use of any in English. Either rules you have been taught, or additional knowledge you have developed in the course of your studies.</i>	[ ___ ]	Open gap-fill

### 4.3 Measures, data coding, and analysis

AJT responses were treatment-coded, with “4” reflecting the most appropriate rating. The eight sentence types entered the statistical model as sum-contrast-coded predictors (Schad et al. 2020). Both individual and pooled sentence types’ influence as well as sentence pair assessment were analysed using cumulative link mixed regression with Laplace approximation from the *ordinal* package (Christensen 2019, version 2019.12.10) in R (R Core Team 2023). Main regression effects from such models are reported based on Type-II Wald  $\chi^2$ -tests, partial effects were derived from the model summaries produced within *ordinal*. Based on log-likelihood-tests, random intercepts and slopes for participants were allowed in the final model. Materials,

data, R scripts with full regression tables, and model criticism can be found at <https://osf.io/7wg6f/>.

The analysis of the open rule verbalisation was more complex, given that participants were free to express rules however they wished. First, each verbalisation was coded for the presence of four concepts deemed relevant to the form of pedagogical rules and the NPI distribution of *any*. Thus, binary variables (present versus not present) were created for (i) negation, (ii) question, (iii) adverb, and (iv) verb.

Apart from the four binary variables, two more aspects of metalinguistic rule knowledge, labelled ‘specificity’ and ‘countability’, emerged inductively from analysis of the responses. Examples of this type of knowledge are outlined here for the sake of completeness (6).

- (6) a. *something but not meaning something specific, ex. anywhere = no specific place.*  
 b. *you use any if there’s a negation in the sentence or if you mean anything in the world, not a specific item.*  
 c. *any can be used if you don’t know how much of something there is, or if there is no restriction to the number.*  
 d. *any is used with uncountable nouns like water or snow.*  
 e. *it usually is used for uncountable things for example: milk.*  
 f. *any can only be used in sentences with uncountable or plural nouns.*

The statements in (6) describe free-choice uses of *any*. That is, uses which relate to indefinite, universal or non-specific semantics, and which are not restricted to negative environments, as in affirmative declaratives like *You can choose any book*. This occurred in 17 % of the rule descriptions. Countability, as in (6c) to (6f) occurred in 25 % of responses and illustrate usages restricted to uncountable nouns or plurals. In general, there is a certain level of awareness among the students that *any* as a lexical item is not necessarily confined to the pedagogical rules around negation and questions. However, the less precise expression of the free-choice usage perhaps reflects that this usage is not typically provided in an easy-to-digest rule of thumb in instruction. Furthermore, countability may be referred to in pedagogical materials to further explain the patterns, as in *we can use some plus uncountable nouns in positive sentences*, or *we can use any plus uncountable noun in negative sentences and in most questions* (see also <https://www.oxfordlearnersdictionaries.com/grammar/online-grammar/uncountable-nouns-some-and-any>). Therefore, this does not seem to indicate a marked ability to generalise beyond pedagogical rules, even if in toto the students can produce quite detailed characterisations of usage.

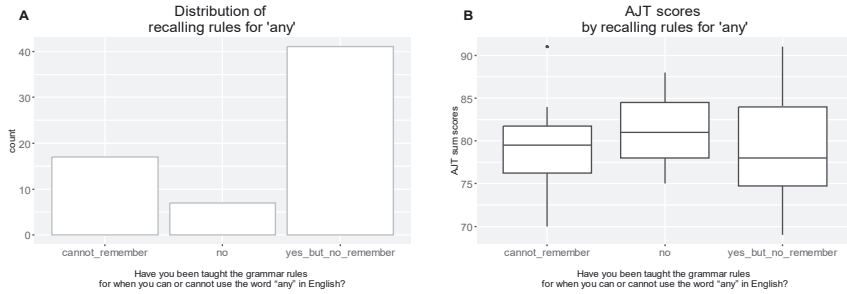
## 5 Results

### 5.1 Acceptability judgements

AJT responses were generally accurate ( $Mdn = 4$ ,  $M = 3.36$ ,  $SD = 0.89$ ,  $skew = -1.31$ ) across all eight sentence types, about 1.68 standard deviations above the middle of the Likert scale and higher than in Marsden et al.'s (2018) advanced learners ( $M = 2.86$ ). Sentence type turned out to be a significant predictor for these ratings ( $\chi^2(7) = 91.77$ ,  $p < 0.001$ ). Questions and negative declaratives were associated with more accurate acceptability ratings than on average, while negative main verbs as well as non-factive main verbs produced worse ratings. The most pronounced deviation from the grand mean comes with sentences containing negative verbs, as in *Jenny denies that she wants any cake*. This type's odds ratio of 0.22\*\*\* (95 %  $CI [0.15, 0.33]$ ,  $SE = 0.20$ ,  $z = -7.48$ ,  $d = -0.84$ ) illustrates that the odds of getting a more accurate acceptability judgement rating is 0.22 times that of the grand mean, or 78 % lower than with sentences on average; in other words, the model would predict that participants rate this sentence type much less accurately than they do on average. Within the four grammatical sentence types, the two taught properties, questions and negation, are associated with significantly more accurate ratings than the two untaught ones ( $\chi^2(1) = 65.97$ ,  $p < 0.001$ ). For taught sentence types, the odds ratio of getting a more accurate acceptability judgement rating is 2.61\*\*\* (95 %  $CI [2.25, 2.96]$ ,  $SE = 0.18$ ,  $z = 8.87$ ,  $d = 0.44$ ) compared to untaught ones, which means it is more than twice as likely to get better ratings with taught than with untaught properties. In sum, our PSTs proficiency relating to *any* is comparably high, varies significantly with type of feature which licenses the occurrence of *any*, and is more accurate for the two features which are typically taught in EFL instruction, comparable overall to the results reported in Marsden et al. (2018) and Gil et al. (2019). Fuller discussion of the acquisition patterns indicated by the AJT is provided in Rankin and Wagner (2023).

### 5.2 Metalinguistic knowledge – recalling rule teaching

The majority of participants state that they recall having been taught rules for the use of *any*, but they cannot remember what the rules are. Indeed, no participant chose the unambiguous “yes” option in response to a teaching recall question (see Figure 1, Panel A). Note, however, that these results are relativised by the rule verbalisation results below, where a large proportion of participants can in effect reproduce the taught pedagogical rule.



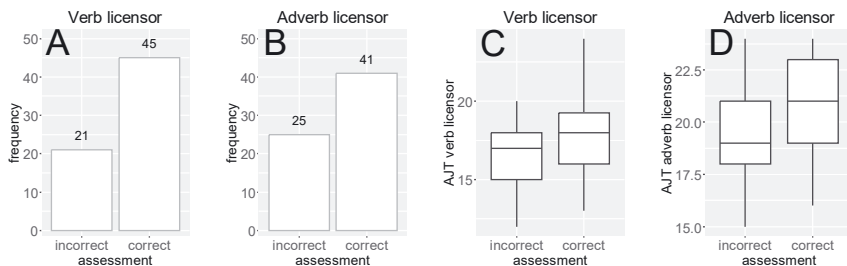
**Figure 1:** Distribution of how participants recalled learning the rules, and AJT scores by how participants recalled learning the rules.

Panel B illustrates how the AJT scores are related to this kind of recall behaviour. As we can see, AJT scores are on average very similar irrespective of whether rule teaching could be recalled ( $F(2,62) = 1.63, p = 0.20, \text{Cohen's } F = 0.23, \eta_p^2 = 0.05$ ). In sum, in how far PSTs can actually recall being taught grammatical rules for *any* is not related to their ability to judge occurrence of the item.

### 5.3 Metalinguistic knowledge – sentence pair assessment

In the sentence pair analysis task, each pair produced a binary variable, illustrating whether assessment was correct or not. That is, if a participant chose either “both sentences acceptable” or chose only the ungrammatical sentence as acceptable, this was coded as incorrect. Figure 2 plots the distribution for those assessments (A and B) and how they relate to the corresponding AJT ratings (C and D).

Panels A and B show that the number of correct assessments is around twice as high compared to incorrect, illustrating a degree of metalinguistic knowledge for the two untaught licensors. When relating this assessment to the corresponding AJT



**Figure 2:** Barplots for sentence pair assessment and boxplots sentence pair assessment by corresponding AJT scores.

scores, panel C shows that AJT scores on the verb licenser are significantly higher for those participants who assessed the corresponding pair correctly ( $M = 17.97$ ,  $SD = 2.81$ ) as opposed to those who assessed incorrectly ( $M = 16.33$ ,  $SD = 2.25$ ,  $F(1, 52) = 4.62$ ,  $p = 0.04$ , Cohen's  $d = 0.62$ , Cohen's  $F = 0.30$ ,  $\eta_p^2 = 0.08$ ). A similar effect emerges for ratings of the adverb licenser (panel D). The AJT scores for participants correctly assessing the sentence pairs ( $M = 20.08$ ,  $SD = 2.41$ ) are significantly higher compared to the others ( $M = 19.43$ ,  $SD = 2.20$ ,  $F(1, 54) = 4.52$ ,  $p = 0.04$ , Cohen's  $d = 0.59$ , Cohen's  $F = 0.29$ ,  $\eta_p^2 = 0.08$ ). Summing up, the PSTs ability to judge occurrence of untaught properties of verb and adverb licensing seems to be linearly related to the more metalinguistic ability to analyse and discriminate between minimal sentence pairs containing these licensers. In other words, those participants who are relatively less able to provide accurate judgements under time pressure do not seem to be able to bring additional metalinguistic knowledge to bear in order to be able to distinguish between sentences in a more explicit analytical task.

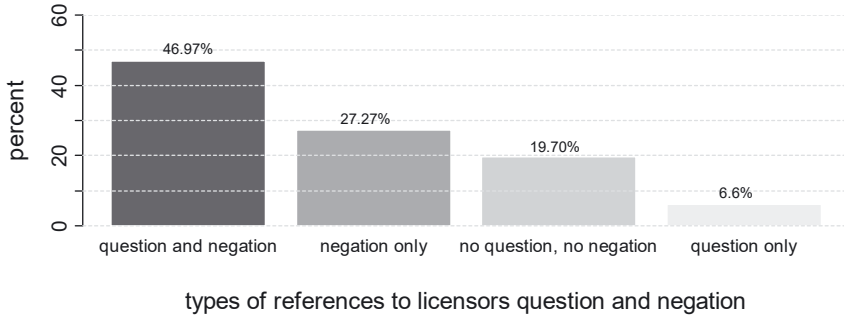
## 5.4 Metalinguistic knowledge – open rule verbalisation

Finally, let us now examine the verbalised knowledge. The prompt elicited a range of types of response. The average extent of responses was 27 words (range 4–119). Three responses were justifications for a lack of metalinguistic knowledge (7), which were not included in the final counting of the patterns.

- (7) a. *To be honest, I cannot remember any rules about when to use “any” at the moment.*  
 b. *I'm really bad at knowing grammar rules, so I usually just rely on my intuition and go from there.*  
 c. *I honestly can't think of any at the moment.*

Despite the PSTs' general assertion from the teaching recall question that they cannot remember the rules, the descriptions of usage provided by the students demonstrates that they indeed seem to have internalised some pedagogical rules. This aligns with the results from Marsden et al. and may provide further evidence in favour of their analysis. Even though the PSTs in general state that they cannot recall the taught rule, the vast majority of responses in fact mirror the standard rules of thumb, relating the occurrence of *any* to negation and questions, typically without extensive further qualification, as illustrated in (8). Thus, even if PSTs cannot recall having been explicitly taught these rules, their responses seem to indicate having internalised pedagogical rules.

- (8) a. *We use any in questions and in negated sentences (like: There aren't any cookies left. or: Are there any cookies left?)*



**Figure 3:** Barplot for the frequency distribution in percent of four features and feature combinations related to the two pedagogical rules.

- b. *any* is mostly used for questions/negations with unknown quantities.
- c. While you use *any* for questions, some is used for positive sentences. In addition, one can use *any* to negate a sentence.

When replies are grouped according to presence of features of the two pedagogical rules (question and negation), the following emerges (Figure 3).

Almost half of respondents reproduce the pedagogical questions-plus-negation-rule. A further 27 % refer only to negation, but not questions, while a minority refers only to questions as relevant to the occurrence of *any*. Only 19 % of the students failed to mention either questions or negation in their explanation of the usage of *any*. These participants only mentioned features such as specificity and countability (see above). The pedagogical rule is thus clearly salient for this group of PST. The usage of *any* in questions is often further specified to state that the type of answer that one expects or that is possible also influences the use of *any*. This is mentioned by 19 % of the responses, as illustrated in (9). This also seems to reflect details of pedagogical rules which are provided in materials for more advanced learners.<sup>4</sup>

- (9) a. *You use any in sentences with negations and in questions where you don't know the answer or what the answer could be.*
- b. *any is also used when you expect a negative or no answer to a question.*
- c. *You usually use 'any' in questions when these question are more "open", Do you have any money. If you ask for a "closed/specific" object/amount, Do you want some?*

<sup>4</sup> See for instance <https://dictionary.cambridge.org/grammar/british-grammar/some-and-any> for representative purposes.

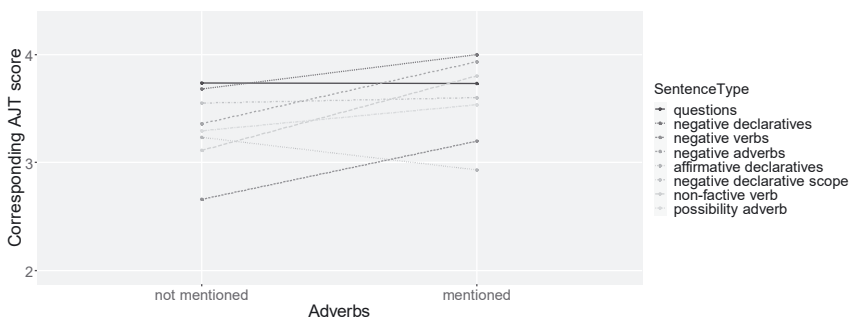
Recall that Marsden et al. (2018) point out that the co-occurrence of certain adverbs with *any* might also be discussed in pedagogical materials as exceptions to the general rule of negation. A small minority of students (8 %) include mention of such usage, as illustrated in (10).

- (10) a. *We often use “any” with “hardly”, “without” or “never”. I hardly have any homework to do.*  
 b. *Any can be used in questions and negative statements. Moreover, with some words like hardly.*  
 c. *We can use any in questions and in negative sentences. There are some exceptions with words such as “rarely”, “hardly” etc.*

Where this is mentioned, it is not integrated into a larger generalisation with respect to the meaning of negation, but is presented as separate to, or an exception to, the core pedagogical rule (in particular in 10b and 10c.). In sum, PSTs broadly reproduce the expected pedagogical rules of thumb, even if there is individual variation in the extent of details provided.

When relating open rule verbalisation to the overall AJT score, it turned out that neither mentioning questions ( $\chi^2(1) = 0.65, p = 0.42$ ) nor negation ( $\chi^2(1) = 0.07, p = 0.79$ ) was significantly associated with performance on acceptability, likely because these cases in general elicit very accurate responses across the participants anyway. The mentioning of adverbs, however, was positively associated ( $\chi^2(1) = 10.05, p < 0.01$ ) with higher scores; thus, participants who expressed this kind of metalinguistic knowledge also had better overall performance on the judgement task, though not consistently across all sentence types, as Figure 4 illustrates.

Knowing explicitly about adverbs, as indexed by mentioning them in open rule verbalisation, correlates with higher accuracy ratings in the judgement task for items involving adverbs. However, the verb licenser sentences are also rated more



**Figure 4:** Interaction plot for AJT scores, sentence type, and adverb as metalinguistic rule knowledge.



accurately by those participants who express knowledge about adverbs licensing *any*. It is negatively associated, however, with questions, negation outside scope, and ungrammatical affirmative declaratives. In sum, the influence of metalinguistic knowledge on the AJT scores is most probably mediated by particular grammatical properties of the polarity item.

## 6 Discussion

Recall that our aim was to investigate PSTs' knowledge about the distribution of the negative polarity item *any*, and in particular to investigate the extent to which this is constrained by pedagogical rules which are typically presented in EFL materials. The participants' proficiency as indexed by acceptability judgement results are broadly in line with previous studies. While performance is overall good, there are effects of sentence type as those features which typically occur in instruction elicit the most consistently accurate judgements.

Metalinguistic knowledge, as indexed by an ability to consciously compare and analyse untaught grammatical properties of *any*, does not seem to have developed extensively beyond the two pedagogical rules of thumb. When presented with the opportunity to analyse and explicitly compare sentences demonstrating untaught properties, participants' performance did not improve markedly in comparison to performance on timed judgements. Furthermore, metalinguistic knowledge, as indexed by an ability to express grammatical rules, predominantly reproduced the textbook question-plus-negation rule, irrespective of whether teaching of such rules could be recalled. Overall, the pre-service teachers in this study show evidence of minor gaps in performance as indexed by acceptability judgements, and in metalinguistic knowledge as indexed by performance on analytical tasks as well as rule verbalisation. We consider these findings in light of (meta)linguistic knowledge as a central component of teacher language awareness and linguistic issues in teacher training.

A first point to make is that the participants in the study were students at first cycle tertiary level (Bachelor's degree). Before becoming practicing teachers, they require a further 2–4 years of training and so their general level of language awareness and metalinguistic knowledge would no doubt progress prior to qualification. Moreover, teaching practice itself will likely contribute to further development. Andrews (1999) found that practicing teachers have more developed metalinguistic knowledge. And Johnston and Goettsch (2000) found that teachers' metalinguistic knowledge improves in the course of teaching practice due to engaging with reference grammars and information in textbooks, etc. However, in some areas where pedagogical rules conflict with “the grammatical reality” (Berry

2015: 16), no amount of engagement with materials can be expected to lead to metalinguistic knowledge which goes beyond pedagogical rules of thumb given that teaching materials are the source of those rules. It is this which results in the “grammar myths” which Berry (2015) discusses.

Of course, the question of the nature of linguistic rules is not straightforward. The aim here is not to create an artificial dichotomy along the lines of pedagogical grammar is bad, linguistic grammar is good. As Swan (1994) discusses, the use of rules of thumb is necessary in language teaching, where the notion of absolute grammatical reality must necessarily be sacrificed. The rules and explanations that a teacher provides are inevitably a compromise between complex competing factors of truth, demarcation, clarity, simplicity, conceptual economy, and relevance. Applying this to the case at hand, the rule of thumb that *any* appears typically in questions and negation can in fact be viewed as an instance of a good pedagogical rule: it is true, though not the whole truth; it is clear, since it does not demand ambiguous or overly technical jargon; it is simple enough to facilitate recall by most of the PSTs in the study, and so on.

While it is advisable, and indeed necessary, to adapt and simplify rules for learners,<sup>5</sup> teachers need to have awareness of the nature of the true complexity in order to appropriately adapt and simplify. If TLA is limited to the already simplified pedagogical rules, this is not a sound foundation for analysis of language production and reflection on materials. Therefore, an important aim of teacher education is to develop sufficient language awareness and knowledge about language. Thornbury (2017: Ch. 1) provides instructive discussion with respect to what teachers need to know about language and how much they need to know, as a prelude to extensive activities and exercises designed to promote teacher language awareness. His proposal is that the route to achieving language awareness comes best from an inductive discovery approach rather than by memorizing the most up-to-date descriptive grammar.

This is an approach that seems basically commendable. However, teacher education must take place under certain practical constraints of time and curriculum content. An inductive discovery procedure might not reach the desired goals given time and resource constraints. An approach to this might be to explore areas of linguistic analysis or linguistic concepts that can be used to effectively promote language analytical abilities (see Rankin and Whong 2020; van Rijt 2020). In the context of the current study, the metalinguistic concept of polarity, for example,

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<sup>5</sup> Even if a rule of thumb is a practical necessity in teaching, it is important to point out that they may be potentially problematic in learning. Explicit rules are often ‘fuzzy’ which may hamper any automatization/developing implicitness (Ellis 2008b) and pedagogical rules-of-thumb may persistently ‘compete’ with implicitly learned syntactic patterns (Long and Rothman 2013).

might prove useful for building teacher language awareness. It is a concept which is involved in the distribution of polarity items in a range of languages, encompassing questions of grammar and vocabulary (see Trawinski et al. 2008). The concept extends and deepens the simpler surface notion of negation, thus contributing to the linguistic expertise of teachers. As we have seen, where PSTs express explicit metalinguistic knowledge which goes beyond the pedagogical rules, this correlates with improved performance on the timed judgement task. This is evident where PSTs can formulate rules for the use of any with adverbs. The suggestion is that further generalising on the basis of the semantics of polarity encompassing negation, negative adverbs and negative verbs may effectively enhance teacher knowledge of the full range of usages rather than relying on different superficial features of usage for different sentence types or collocation patterns. Of course, as with any proposal about the nature of language awareness, this faces practical challenge of navigating what aspects of language awareness are relevant for teacher education, how these relate to formal and functional linguistic analysis, and how they can be integrated appropriately into language teacher education (see Lantolf 2009).

This is an ongoing endeavour, to which the present study could hopefully contribute. In particular, it has shown that in line with findings about teacher cognitions and beliefs, the linguistic knowledge of L2 PSTs is conditioned by their experience as L2 learners (see Borg 2015). This finding extends the conclusions about beliefs about pedagogical practices with insights about particular linguistic features. As an implication for teacher training, we endorse Long and Rothman's (2013: 76) proposal that one solution to problems of simplified pedagogical rules is to "provide [teachers] with linguistically precise rules of the target grammar, as well as tangible proof that they are not presently armed with such precise tools without some training in linguistics".

Finally, this study comes with a number of limitations. First, Unlike the well-established AJT paradigm, metalinguistic knowledge measures are less robust and reliable. Although various measurements for this type of knowledge have been discussed (Ellis and Loewen 2007; Ellis and Roever 2018), we neither have generally accepted measures nor established statistical routines for their analysis. Future research might seek to address this in order to produce measures of metalinguistic knowledge that would be more readily comparable. Second, this cross-sectional empirical study can only offer a snapshot impression of proficiency and metalinguistic knowledge; it is blind in terms of developmental effects. Thus, future studies could examine pre-service teachers' proficiency and metalinguistic knowledge longitudinally in order to better understand how knowledge changes and develops, and response to what sort of training.

**Competing interests:** The authors hereby declare that there are no competing interests.

**Data availability:** Data and analysis scripts can be found at <https://osf.io/7wg6f/>.

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