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Second Language Acquisition of Constraints on WH-Movement by L2 English Speakers: Evidence for Full-Access to Syntactic Features

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Abstract: This paper presents results from two experiments on the L2 acquisition of wh-features and relevant constraints (Superiority and Subjacency) by L1 Sinhala–L2 English speakers. Our results from a Truth Value Judgment Task and a Grammaticality Judgment Task with 31 English native controls and 38 Sinhala/English bilinguals show that the advanced adult L2 speakers of English we tested have successfully acquired the uninterpretable wh-Q feature and relevant movement constraints in English, despite the lack of overt wh-movement in L1-Sinhala. These results raise questions for Representational Deficit Accounts of second language acquisition and offer evidence that (i) uninterpretable syntactic features are not necessarily subject to an early critical period and (ii) uninterpretable features not instantiated in learners’ L1 can be available for L2 syntactic computation. We take our results as evidence for full access by L2 learners to syntactic properties that are not instantiated in their L1, but that remain accessible due to a cognitive capacity for language (i.e., knowledge of Universal Grammar) independently of the L1.

Keywords: uninterpretable features; Sinhala/English bilinguals; wh-movement

1. Introduction

This paper presents an experimental study to re-evaluate the Feature Interpretability Hypothesis (Hawkins and Hattori 2006; Prentza and Tsimpli 2013; Tsimpli and Dimitrakopoulou 2007), a representational deficit theory of learnability in adult Second Language Acquisition (SLA) that has received a substantial amount of attention in SLA research. The proponents of the Feature Interpretability Hypothesis (henceforth the Interpretability Hypothesis) adopt a feature distinction proposed in syntactic theory within the Minimalist Program (MP) (Chomsky 1995, 2001 and thereafter) and postulate that the L2 acquisition of uninterpretable syntactic features (as opposed to interpretable features), which are purely syntactic and interface independent in nature, is subject to an early critical period, a time when one has complete access to the inventory of features made available by Universal Grammar (UG): “in this theory, the domain of the functional lexicon in the Language Faculty (FL) ceases to be accessible once first language acquisition is complete” (Tsimpli and Dimitrakopoulou 2007, p. 217). Therefore, after the so-called critical period, during which a child constructs a mental grammar by acquiring feature values/specifications for his/her native language, an L2 learner has access to only those uninterpretable syntactic features that are directly instantiated in their L1. Given this, acquiring native-equivalent competence in any new uninterpretable syntactic features (those features absent in the learner’s L1) is argued to be ‘impossible’ after the critical period, and apparent native-like performance by L2ers (Second Language Learners) may not imply that they have developed native-equivalent underlying grammatical knowledge and representations of those features: “by hypothesis, there is a permanent ‘loss of capacity to acquire’ in this domain” (Hawkins and Hattori 2006, p. 272). In contrast to uninterpretable syntactic features, interpretable
features can be fully acquired regardless of whether L2 acquisition takes place before or after the proposed critical period. Thus, the Interpretability Hypothesis assumes partial access to UG in post-childhood L2 acquisition.

Evidence for the Interpretability Hypothesis has been reported in a variety of studies conducted in different L2 learning settings (Hawkins and Hattori 2006; Kong 2017; Prentza 2014; Prentza and Tsimpli 2013; Tsimpli and Dimitrakopoulou 2007). In a study involving Greek L2 speakers of English (intermediate and advanced proficiency), Tsimpli and Dimitrakopoulou (2007) present evidence from a paced grammaticality test to show that Greek native speakers have difficulty attaining native-equivalent competence in English wh-questions. They argue that this difficulty arises from a typological distinction between the two languages, which can be attributed to different uninterpretable features: Greek uses resumptive agreement in wh-questions, which is absent in English. Due to this syntactic difference, Greek learners would find it difficult to acquire a new feature specification (which would lead them to abandon their L1 resumptive strategy in forming English wh-questions), and instead end up in the formation of non-target-like structures in their L2 English. Tsimpli and Dimitrakopoulou (2007) showed that the same is true for advanced learners of English, implying a permanent ‘loss of capacity’ to acquire in this domain.

Hawkins and Hattori (2006, henceforth H&H) conducted a similar study involving Japanese native speakers acquiring (L2) English wh-questions. English and Japanese are typologically distinct in the way they form wh-interrogatives. In English wh-questions, the complementizer (C) has an uninterpretable syntactic feature (H&H name it uwh* feature, following Adger 2003) responsible for the overt movement of a wh-phrase from its thematic or case position to the Spec(ifier) CP (i.e., English is an overt wh-movement language). However, the same feature is absent in C in Japanese, as evidenced by the fact that wh-phrases do not undergo overt wh-movement in Japanese (i.e., Japanese is a wh-in situ language). Given this, H&H hypothesized that not only would Japanese speakers show difficulty in the acquisition of English wh-questions, but they would also fail to acquire syntactic properties that are dependent upon the uninterpretable uwh* feature that triggers overt wh-movement. In a Truth Value Judgment Task (TVJ) testing 19 English L2 (Japanese L1) speakers and a control group of 11 English monolinguals, H&H found that the performance of Japanese L1 speakers in their experimental test was distinct from that of English native speakers in a statistically significant way. They argue that this result shows that the acquisition of the English uninterpretable wh-feature (uwh*) is problematic for L2 learners of English (L1 speakers of Japanese).

The Interpretability Hypothesis is a Representational Deficit (RD) account; it assumes that at least part of the observed divergence in the performance between native speakers and L2ers results from a deficit in their knowledge of features that determine the properties of narrow syntax. Representational Deficit accounts differ from Full Access approaches (e.g., Campos-Dintrans et al. 2014; Epstein et al. 1996; Schwartz and Sprouse 1996; White 2003) in the way UG constrains the development of interlanguage (L2) grammars. Full Access approaches assume that L2 learners have access to the complete inventory of features (along with related syntactic operations and principles) of UG without any restrictions imposed by a critical period. More importantly, Full Access approaches maintain that native-like cognitive representations are indeed possible in L2 syntax despite a Poverty of the Stimulus (e.g., Chomsky 1982) situation: “L2 learners acquire complex and subtle properties of language that could not have been induced from the L2 input” (White 2003, p. 22). Still, proposals supporting Full Access to UG can differ in terms of what they assume to be the initial state of L2 acquisition. For instance, Schwartz and Sprouse’s (1996) Full Transfer/Full Access Hypothesis proposes that the initial state of L2 acquisition consists of the morpho-syntactic system of the learners’ L1. In contrast, Epstein et al. (1996) assume that L2 acquisition is not different from L1 acquisition in terms of what constitutes the initial state of language acquisition. The initial state for both L1 and L2 is UG itself. Despite these differences, approaches supporting Full Access to UG in L2 do not predict intrinsic difficulties in the domain of uninterpretable syntactic features. Given this, not only are
L2ers expected to be able to reset parameters or acquire new feature specifications for uninterpretable syntactic features, but their ability to acquire the corresponding native-equivalent underlying representations cannot be permanently lost due to the time of onset of L2 acquisition.

This paper re-evaluates the predictive and explanatory power of the Interpretability Hypothesis regarding the acquisition of wh-questions and corresponding locality constraints (Subjacency and Superiority) by L1 Sinhala-L2 English speakers. To re-evaluate the Interpretability Hypothesis, we conducted two experiments—a Truth Value Judgment Task (TVJ) and a Grammaticality Judgment Task (GT)—with 38 L2 speakers of English (Sinhala L1 speakers) and a control group of 31 English native speakers. The Truth Value Judgment Task (TVJ) is a partial replication of a similar task carried out by Hawkins and Hattori (2006). However, our study is different from Hawkins and Hattori’s study at least in two respects. First, this study provides an independent measurement of L2 participants’ proficiency in English, which is absent in H&H. Second, unlike H&H’s study, which uses only 19 L2ers, we use a larger sample of 38 L2 participants. The results from these two experiments clearly reveal, contra predictions of RD accounts, that advanced L2 speakers are sensitive to both Superiority and Subjacency constraints that govern the syntax and the interpretation of English wh-questions with overt wh-movement. This indicates that the L2 English learners have acquired the relevant uninterpretable uwh* syntactic feature that triggers the application of Superiority and Subjacency, despite their non-instantiation, at least in the same syntactic domain, in the L1 syntax. Based on these results, we will argue that the reconfiguration of uninterpretable syntactic features is possible in adult L2 acquisition, and the acquisition of those features is not intrinsically restricted by an early critical period for language acquisition, challenging RD accounts. In addition to its theoretical contribution, this paper represents the first generative SLA investigation of the L2 acquisition of English syntax by L1 speakers of Sinhala (or Sinhalese), an insular Indic Indo-Aryan language spoken by approximately 17 million people in Sri Lanka). Before we present the experimental study, we discuss the relevant syntactic properties of English and Sinhala.

2. Background

2.1. The Syntax of Wh-Questions: The Case of English and Sinhala

English and Sinhala are distinct regarding the way wh-interrogatives are formed. As it is extensively discussed in the generative literature, English is an overt wh-movement language. A single wh-phrase initially merged inside the vP domain (in non-echo questions) subsequently undergoes overt syntactic movement to its surface position, the specifier of the Complementizer Phrase (CP), where it is pronounced. This is illustrated in (1) and (2) below:

(1) \([\text{CP} \text{What, did [TP Siri} [vP \text{read t} i \text{ yesterday?] ]]}\]
(2) \([\text{TP} \text{Mary wondered [CP what, [TP Siri} [vP \text{read t} i \text{ yesterday?}].]]]\]

Sinhala, in contrast, is a wh-in situ language (Gair 1983; Hettiarachchi 2015b; Kishimoto 2005): in the unmarked case, a wh-phrase always stays in its first merged position in the syntactic structure.

(3) \([\text{CP} [\text{TP} \text{siri} [vP \text{mokak da kiyeww-e?}]]]\)
Siri.NOM what Q read.PAST-E
‘What did Siri read?’

(4) \([\text{TP} \text{mary [CP [TP siri} [vP \text{mokak da kiyeww-e kiyala} [kalpna-kola].]]]\]
Mary. NOM Siri.NOM what Q read.PAST-E that wonder.PAST.A
‘Mary wondered what Siri read.’

The examples in (3) and (4) show at least two properties associated with Sinhala wh-questions: (i) in the unmarked case, a Q-particle do occurs adjacent to the wh-phrase, and (ii) the verb of a wh-question is obligatorily marked by an –e suffix (Kariyakarawana 1998). This is different from declaratives and yes/no questions in Sinhala, which carry an
–a suffix on the verb, as illustrated in (5) below. The e-marking on the verb has been treated as a licensing requirement for the wh-element in Sinhala (see Kariyakarawana 1998).

(5) a. siri pota-k kiyeww-a. Siri.NOM book-INDEF.ACC read.PAST
   ‘Sri read a book.’

b. siri pota-k kiyeww-a di?
   Siri.NOM book-INDEF.ACC read.PRE-A Q
   ‘Did Sri read a book?’

Like mono-clausal, local wh-interrogatives illustrated in (1) and (3), complex questions involving Long Distance (LD) wh-movement show the same distinction between the two languages. As it is extensively argued in syntactic theory, in a long-distance (inter-clausal) wh-question in English, such as the one illustrated in (6), the wh-phrase undergoes overt movement from the position where it is first merged inside the embedded clause to the matrix clause initial position. The lack of overt wh-movement yields ungrammaticality in non-echo questions, implying the obligatory nature of this operation (7). Moreover, as it has been extensively argued in generative syntax, Long Distance (LD) wh-movement happens in a successive cyclic manner via the embedded Complementizer Phrase (CP):

(6) [CP What did [TP Siri say [CP which car ti [vP bought ti yesterday]]]]
(7) ‘* Siri said Grace bought what yesterday?’

In contrast, in the non-echo question corresponding to (6), Sinhala displays wh-in-situ properties:

(8) [TP siri [CP [TP amma [vP monwa] do genawa] kiyala]] kiywwe]
   ‘What did Siri say (that) mother brought?’
   Lit: ‘Siri said that mother bought what?’

According to Ross (1967), Long Distance (LD) wh-movement in English is subject to various island constraints, syntactic domains from which an element cannot be extracted. This is illustrated below with a Complex NP Island (9), Wh-island (10) and an Adjunct island (11):

(9) * [CP Which car did [TP Mary hear [DP the rumor [CP ti that you sold ti]]]]
(10) * [CP How do [TP you wonder [CP which car [TP Sara could buy ti ti]]]]
(11) * [CP Who did [TP Ravi enter the building [vP before [TP Jay called ti]]]]

Chomsky (1973 and thereafter) proposed a more general constraint to account for the ungrammaticality associated with Ross’ (1967) island violations. This has been known as the ‘Principle of Subjacency’, assumed in Principles and Parameters syntax to be a property of UG. Subjacency requires that movement be a local operation that takes place in short cycles via intermediate CPs. If a wh-phrase crosses more than one bounding node (TP and DP in English) at a time, as illustrated in (12), it violates Subjacency. Subjacency successfully accounts for the ungrammaticality of (12) in which the movement of the wh-phrase ‘which car’ from the embedded clause to the matrix CP crosses two bounding nodes: TP and DP.

(12) *[CP Which car did [TP Mary hear [CP ti that you sold ti]]]

In addition to Subjacency, Chomsky (1973, p. 246) observed that in English multiple wh-interrogatives, the movement of one wh-phrase over the other results in ungrammaticality. He proposed the condition in (15) to account for the type of ungrammaticality in (14).

(13) [CP Who, ti [vP [bought what]]]
(14) * [CP What did [TP who [vP buy ti]]]

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(13) [CP Who, ti [vP [bought what]]]
(14) * [CP What did [TP who [vP buy ti]]]
(15) Superiority Condition:
(a). No rule can involve X, Y in the structure: \( \ldots X \ldots [ \ldots Z \ldots WYV \ldots ] \ldots \) where the rule applies ambiguously to Z and Y, and Z is superior to Y.
(b). The category A is superior to category B if every major category dominating A dominates B as well but not conversely.

The Superiority condition in (15) imposes a restriction on which wh-phrase(s) can undergo movement into the Spec-CP position when a clause contains multiple wh-phrases. According to (15), who (Z) in (13) and (14) is superior to what (Y), given that every major category (i.e., at least every maximal projection) dominating who also dominates what (i.e., CP and TP) but not conversely (i.e., VP dominates what, or its trace position, but not who). However, as discussed in Lasnik and Saito (1992), Bošković (1997), and other work, even in English, the Superiority Condition, as formulated in (15), is not without exceptions. In (16b) below, the superiority condition predicts that the movement of what over where would yield ungrammaticality, as where is merged at a higher position than what in the relevant structure. Nevertheless, contra this prediction, either of the two wh-phrases can undergo movement into Spec-CP without yielding ungrammaticality.

(16) a. \([CP \text{Where did } [TP \text{you } [vP \text{[read what}] t_i]]]]\)?
b. \([CP \text{What did } [TP \text{you } [vP \text{[read } t_i ] \text{where}]]]]\)

Given this, Chomsky’s superiority condition has received much discussion both in GB and Minimalist syntax (e.g., Aoun et al. 1981; Epstein and Seely 2006; Honstein 1995; Lasnik and Saito 1992), and the phenomena that instantiate its application do not involve all wh-movement questions, raising additional questions regarding L2 acquisition. We will return to this issue in our Results and Discussion section.

2.2. Constraints on Sinhala Questions

We observed above that Sinhala is a wh-in situ language: in the unmarked case, a wh-phrase stays in situ in overt syntax, maintaining, e.g., an SOV word order (17) for an object wh-question.

(17) \([CP \text{[TP } \text{siri } [vP \text{mokak d } @ \text{kiyeww-e?]}}]]\).
‘What did Siri read?’

However, wh-questions in Sinhala, similar to non-wh clauses, also allow the OSV word order, as illustrated in (18) below:

(18) mokak d @ siri kiyeww-e ?
what Q Siri.NOM read.PAST-E
‘What is it that Siri read?’

Even though (18) is superficially similar to an overt wh-question in English, its non-canonical word order in Sinhala is derived through a syntactic operation called scrambling, driven by a different syntactic feature than \(\text{uwh}^*\) in C. Following Miyagawa’s (2009) proposal for Japanese scrambling, Hettiarachchi (2015a) argues that clause initial scrambling in Sinhala (OSV) is triggered by either a topic or focus feature, as further discussed below. Consequently, scrambling can apply even to non-wh elements in Sinhala, unlike wh-movement in English, as shown in (19b). Similar properties regarding scrambling are also found in Japanese.

(19) a. siri pot @ kiyewwa.
Siri.NOM book.ACC read.PAST
‘Siri read the book.’
b. pot @ siri kiyewwa.
book.ACC Siri.NOM read.PAST
‘The book, Siri read.’

It has been argued that wh-displacement in (18), which is optional in Sinhala, is also an instance of scrambling (wh-scrambling) and this has been supported by the fact that it
does not exhibit Superiority effects, as shown in (20), unlike wh-movement in English (see Kariyakarawana 1998, p. 145):

(a) siri [kau də mokak də kiwwe kiyəla] kalpona-kə ruwa.
   ‘Siri wondered who said what.’

(b) siri [mokaki də kau də ti kiwwe kiyəla] kalpona koruwa.
   ‘Siri wondered what who said.’

If scrambling were driven by the same uninterpretable feature that drives wh-movement in English, the displacement of mokak ‘what’ in (20) would be expected to show sensitivity to Superiority. Evidence for the absence of overt wh-movement in Sinhala also comes from the status of Subjacency violations. Similar to many other wh-in situ languages, wh-phrases are allowed inside a variety of syntactic islands in Sinhala (Gair 1983; Kariyakarawana 1998; Kishimoto 2005). We illustrate this with the following examples from Kishimoto (2005): Relative clause island (21), Complex DP Island (22) and Adjunct island (23), each of which is grammatical in Sinhala in a non-echo question, as opposed to the corresponding overt wh-movement in English:

(21) [CP oyə [DP chitra kaa-[tə dunə] potə] də kiyewwe]?
   you Chitra who-DAT gave book Q Read
   ‘Who did you read the book that Chitra gave to?’

(22) [CP chitra [DP[CP Ranjith mənə wa gatta kiaəə] kabakataawə] də æhuwe]?
   Chitra Ranjith what bought that rumor Q heard
   ‘What did Chitra hear the rumor that Ranjith bought?’

(23) [CP chitra mənə wa kənə kətə] də Ranjith pudumə unne]?
   Chitra what ate when Q Ranjith surprise became
   ‘What was Ranjith surprised when Chitra ate?’

In addition, Sinhala scrambling, unlike English A’-movement, is allowed from a variety of syntactic islands in Sinhala, as illustrated in the following examples of long-distance (inter-clausal) scrambling from a Complex DP Island (24) and an Adjunct Island (25). In each case, the island violation yields an ungrammatical sentence with topicalization in English, but not in Sinhala. This contrast indicates that scrambling in Sinhala is not driven by the same features as overt wh-movement in English.

(24) karekak [TP məmə [DP[CP sita rajut tə dunna kiyəna] katawə] dannəwa.]
   car.INDEF I.NOM Sita.NOM Raju-DAT gift.PAST that story know.PRE
   ‘A car, I know the story that Sita gave (as a gift) to Raju.’

(25) [chitrəpatiya sunil tə balanə-kota, eya-tə parə kətawa-k mətə kə nə.]]
   movie.ACC Sunil.NOM watch when he-DAT old story INDEFmember.PAST
   ‘A movie, Sunil remembered an old story when he watched it.’

The absence of Subjacency violations in Sinhala wh-in situ questions is compatible with Huang’s (1982) generalization that wh-in situ questions involve LF (wh-)movement, which was earlier argued to be sensitive only to the Empty Category Principle (ECP), but not Subjacency, unlike overt wh-movement (Chomsky 1982).

In terms of the properties outlined in this section, Sinhala is structurally very similar to Japanese: (i) both languages are wh-in situ languages (they lack overt wh-movement), (ii) they have wh-scrambling which only superficially resembles overt wh-movement in English, (iii) scrambling does not exhibit Superiority and Subjacency effects, and (iv) wh-phrases can occur inside islands.

2.3. Learning Tasks

Given our discussion in the previous section, Sinhala native speakers acquiring L2 English must acquire a new uninterpretable syntactic feature (uwh* feature) that is not instantiated in wh-questions in their L1 syntax. If the Interpretability Hypothesis is on the
right track, the acquisition of English wh-questions should pose a learnability problem for at least those Sinhala L1/English L2 speakers who undertake the L2 learning task after the complete acquisition of functional feature specifications in their L1 syntax. For them, L2 acquisition involves an instance of Parameter Re-setting or a reconfiguration of feature specifications in the domain of the L2 functional lexicon, as elaborated below. In this section, we briefly outline specific learning tasks for the native Sinhala speakers acquiring L2 English wh-questions, along with predictions from different hypotheses and research questions to be investigated in this study.

As outlined in Section 2, the competence of an English native speaker in the domain of wh-interrogatives is characterized by at least three properties:

I. A wh-phrase is first merged inside the vP and it subsequently undergoes overt wh-movement to Spec-CP.

II. The uninterpretable syntactic feature [$uwh^*$] in C triggers obligatory syntactic movement of the wh-phrase, which needs valuation/deletion in narrow syntax.

III. The movement of the wh-phrase in any derivation must adhere to principles of locality such as Superiority and Subjacency (or, in Minimalist terms, to principles such as the Phase Impenetrability Condition/PIC and Minimal Link Condition/MLC)

Moreover, for an English native speaker, a long-distance wh-question in English (involving adjuncts) can be ambiguous between a matrix and an embedded reading for the fronted wh-phrase. For example, the following wh-question could either be a question about when Siri said something or when Mary bought a new car.

(26) \[CP \text{When did } [TP \text{Siri say } [CP \text{[TP Mary bought a new car]]}]\]

It is also part of the native speaker competence that the embedded reading of a long-distance wh question could be blocked by an intervening wh-phrase at the intermediate Spec-CP, as the result of a Subjacency violation, as shown in (27) below:

(27) \[CP \text{When}_k \text{did } [TP \text{Siri say } [CP \text{what, ] TP Mary [vP bought t] t] [}}}]

Sinhala native speakers exposed to L2 English must acquire all the three properties outlined above, for which they do not have overt evidence in L1 Sinhala (as discussed in detail in the section on wh-questions in English and Sinhala). As far as the first two properties are concerned, recall that a wh-phrase first merged inside a vP does not undergo overt wh-movement in Sinhala. Given this, the first task of these L2ers is to learn/acquire that, in the case of English overt wh-movement, wh-phrases are pronounced at a different structural position from where they are interpreted at LF. This also means that in incremental processing, these L2ers must learn to form an unbounded dependency between an antecedent (wh-phrase at Spec-CP) and its trace/copy inside the vP where it is initially merged. Second, they need to learn that a long-distance wh-question can be ambiguous in English, as in (26), though the same ambiguity is absent in Sinhala, in which distinct sentences are necessary to yield the two meanings. Notice that the following Sinhala counterparts for the English question in (27) are not ambiguous. In Sinhala, each interpretation is associated with a different word order in overt syntax (matrix question in (28) and embedded question in (29).

(28) lam\text{\_\_ya} kaw\text{\_\_da} d\text{\_\_} [eyat\text{\_\_} thuwal\text{\_\_una} kiy\text{\_\_la}] kiww\text{-e}.
\text{boy.NOM when Q he-DAT get-hurt.PAST that] say-E} ‘When did the boy say he got hurt?’

(29) lam\text{\_\_ya} [eyat\text{\_\_} kaw\text{\_\_da} thuwal\text{\_\_una} kiy\text{\_\_la}] d\text{\_\_} kiww\text{-e}.
\text{boy.NOM he. DAT when get hurt-E. PAST that] Q say.A} ‘The boy said he got hurt when?’

2.4. Predictions

Let us first assume that Sinhala native speakers in our study have had sufficient exposure to construct a mental grammar for L2 English. Considering different hypotheses or
theories on the role of UG in adult L2 acquisition, several predictions are possible concerning their interlanguage development in the domain of English wh-questions. Full Access approaches (e.g., Epstein et al. 1996; Schwartz and Sprouse 1996; White 2003) in general would predict that these L2ers can successfully acquire the relevant uninterpretable feature \([uwh^*]\) that triggers overt wh-movement in English and the application of related constraints, given that they have direct access to the complete inventory of both interpretable and uninterpretable syntactic features made available by UG. As a result, successful L2 acquisition in this context is predicted to be able to yield native-like sensitivity to locality constraints associated with wh-movement, so that English L2 learners (Sinhala L1) also distinguish English wh-movement from scrambling, a syntactic operation driven by a different syntactic feature in their L1, as discussed in the previous section. Meanwhile, a prediction in line with Representational Deficit (RD) accounts such as the Interpretability Hypothesis is that Sinhala L1/English L2 speakers would continue to apply overt wh-scrambling to form wh-dependencies in the target grammar, provided that they began the L2 acquisition process after having acquired these properties in their L1. Under RD accounts, the complete acquisition of the \(uwh^*\) feature in L2 syntax must not be possible for late L2 learners, as they do not have access to the UG inventory of uninterpretable syntactic features after parameter setting in their L1 (Tsimpli 2003). If the Feature-Interpretability Hypothesis were on the right track, this could be evident in the absence of native-like sensitivity to locality constraints (Superiority and Subjacency), which are associated with the uninterpretable \(uwh^*\) feature that triggers overt movement in English wh-interrogatives. Finally, in terms of the properties outlined in the previous section, recall that Sinhala is one language which is structurally very similar to Japanese. Thus, if RD accounts were on the right track, the acquisition of English overt wh-movement and corresponding constraints would be expected to pose a learnability problem for Sinhala L1-English L2 speakers; in the same way, they have been argued in Hawkins and Hattori (2006) to be problematic for Japanese L1 speakers acquiring L2 English. This study will re-evaluate these predictions in view of the new experimental results presented in the following section.

2.5. Research Questions

This experimental study investigates the following research questions:

1. To what extent are Sinhala L1-English L2 speakers sensitive to the locality constraints—Superiority and Subjacency—in English wh-interrogatives, implying that they have successfully acquired \([uwh^*]\) feature in wh-interrogatives?
2. Does the knowledge of the L2 speakers in this study significantly differ from that of the English native speakers in overt wh-movement in English?

3. Experiment 1—Truth Value Judgment Task

Experiment 1 involves a Truth Value Judgment task (TVJ) (Crain and Thornton 1998), a slightly modified version of the one used in Hawkins and Hattori (2006). The goal of this task is to test the sensitivity of Sinhala L1-English L2 speakers to violations of Superiority and Subjacency in English long-distance wh-extractions, which would constitute evidence that they have or have not acquired the \(uwh^*\) that triggers wh-movement in English. It is assumed that the TVJ task would allow us to test participants’ sensitivity to the two locality constraints on wh-questions in a more natural way, including possible ambiguities in different structures.

3.1. Participants

Thirty-nine L2 speakers of English (L1 Sinhala) in Sri Lanka and a control group of 31 English native speakers in the US participated in the two experiments reported below. The mean age of the L2 speakers was 28.3 (SD = 8.6). The mean age of the English monolinguals was 22.2 (SD = 7.5). At the time of the testing, all L2 participants were either studying or teaching English at a university in Sri Lanka. Native English controls were recruited from a pool of undergraduates at a large research university in the US. In addition to the two
experiments and a language background survey, all participants completed an English language proficiency test based on the ECPE Examination for the Certificate of Proficiency in English, which is aimed at the C2 level of the Common European Framework of Reference. This test (a Cloze Test) consisted of 40 test items and was worth 40 points in total. Based on the results of the proficiency test, L2 speakers were assigned to two proficiency groups. Participants who scored between 34 and 40 were included in the Advanced Proficiency Group (n = 14) while the ones with lower scores (15–33) were included in the Intermediate Proficiency Group (n = 23).

3.2. Materials and Procedure

The TVJ experiment consisted of a series of test items, and each included a short background story, followed by a multiple wh-question about the content of the story and two possible answers. Both answers were pragmatically plausible, given the context created by the story. However, some answers were grammatically impossible, because the interpretation they corresponded to would involve violations of Superiority, Subjacency or both. This is illustrated in the sample test item below:

(30)  
(a) Story  
James is making plans to go hike the Great Wall of China during the summer. Last Tuesday, James promised to call Lois the following day with the details of the trip so that Lois can join him too.

(b) Test Question  
Who did James promise he would call when?

(c) Answers  
a: James promised that on Wednesday he would call Lois.  
b: James promised Lois that he would call on Wednesday.

In this task, the participants were asked to choose the most acceptable answer (they had the option to choose either one or both answers) to the question that was being asked. Since both answers were always pragmatically possible given the context created by the story, the difference in the acceptance or non-acceptance of either answer to the test question relied on whether the subjects allowed the fronted wh-phrase in the test question (who in (30b)) to be interpreted either in the matrix or embedded clause, which was the only difference between the two possible answers. For the answer (a) to be accepted in the above example, both who and when must have scope in the embedded clause. At least according to the standard view in generative syntax (following Chomsky 1973), this violates the Superiority condition: who would have to be generated lower than when in the syntactic structure corresponding to the embedded clause interpretation of who in (a). For the answer (b) to be accepted, who must have scope in the matrix clause while when is expected to have scope in the embedded clause; this reading arguably does not yield any syntactic violations. The two readings are illustrated in (31) below:

(31)  
\[ [\text{CP Who did [TP James promise __ [CP [TP he would [VP call __] when]]]}] \]

Following Hawkins and Hattori (2006), we predict that the participants who have successfully acquired the [uwh*] will show sensitivity to Superiority and Subjacency violations, choosing answers that do not involve such violations in the interpretation of the test question.

Each condition included four test items. Items in Condition 1 involved no violation of Subjacency or Superiority in the interpretation of the fronted wh-phrase either in the matrix clause or the embedded clause. Items in Condition 2 involved a Superiority violation in the embedded clause interpretation of that wh-phrase (31). In Condition 3, the embedded clause reading was blocked by a Subjacency violation, and in Condition 4, the same was
blocked by both Subjacency and Superiority violations. Items in C1 were used as a baseline to evaluate whether the L2 participants are sensitive to the scopal ambiguity in English wh-questions. Recall that such ambiguity is something for which these L2ers do not have overt evidence in their L1, i.e., in Sinhala wh-questions, each scopal interpretation is associated with a different word order, as we discussed before.

3.3. Results

Figure 1 summarizes participants’ mean choices of matrix/embedded readings for the fronted wh-word in each condition. The readers are invited to pay close attention to how the three groups of participants (NS (Native), AP (L2 Advanced Proficiency), and IP (L2 Intermediate Proficiency) have performed in the control condition (C1) and each of the three experimental conditions. As stated earlier, Condition 1 included complex wh-questions in which either the matrix or embedded reading was predicted to be possible for the fronted wh-phrase without any violations of Superiority or Subjacency. These items allowed us to determine whether L2 participants, similar to native speaker controls, are sensitive to the scopal ambiguity in long-distance English wh-interrogatives. Our results show that English monolinguals in these cases had a preference, though marginally, for the embedded scope reading (Mean = 0.85, SD = 0.27) over the matrix one (Mean = 0.73, SD = 0.34). Advanced L2ers, in contrast, showed almost no difference in their choices between matrix (Mean = 0.64, SD = 0.34) and embedded readings (Mean = 0.66, SD = 0.32) while the intermediate L2 group displayed a strong preference for the matrix interpretation (Mean = 0.73, SD = 0.30) over the embedded one (Mean = 0.47, SD = 0.36). Despite these differences, all three groups showed that (i) they were sensitive to the scopal ambiguity in long-distance wh-movement, and (ii) they can assign both matrix and embedded readings for the fronted wh-word when there is no movement violation involved. Thus, their performance in this condition provided us with a baseline to evaluate participants’ scopal assignment in the other three experimental conditions.

Figure 1. Mean matrix and embedded (Embed) interpretations of the higher wh-phrase for all three participant groups in the TVJ task: NS (Native), AP (L2 Advanced Proficiency), and IP (L2 Intermediate Proficiency).

We submitted participants’ mean choices of embedded/matrix readings to a repeated measures ANOVA, with proficiency as a between subject factor and condition (C1 to C4) and interpretation site (matrix vs. embedded clause) as within subject factors. Both
by-participant and by-item analyses showed a significant three-way interaction of interpretation site, condition, and proficiency ($F_1 (6, 12) = 3.91, p < 0.001$, $F_2 (6, 24) = 3.43, p < 0.01$), and significant effects of interpretation site ($F_1 (1, 65) = 14.37, p < 0.001$, $F_2 (1, 12) = 33.82, p < 0.001$), condition ($F_1 (3, 63) = 15.90, p < 0.001$, $F_2 (3, 12) = 8.08, p < 0.001$), and proficiency ($F_1 (2, 65) = 8.78, p < 0.001$, $F_2 (2, 11) = 10.80, p < 0.003$). Given that proficiency interacted with the other two factors in question, we conducted separate repeated measures ANOVAs for each participant group, including several post hoc tests (paired $t$-tests) where necessary.

Recall that items in the Superiority condition (C2), unlike those in the baseline condition, offered a different possibility in terms of their scopal interpretation for the fronted wh-word: the embedded reading for the matrix wh-word was predicted to be blocked by a Superiority violation, given standard theoretical accounts. When compared to the baseline condition (Mean = 0.85, SD = 0.27), native speakers’ embedded reading in this instance (Mean = 0.54, SD = 0.33) was found to be significantly different, $t (30) = 4.42, p < 0.001$. However, this difference was not found for the advanced L2 group, as their mean embedded interpretation in this Condition (Mean = 0.71, SD = 0.31) was not significantly different from their own performance in condition 1 (Mean = 0.66, SD = 0.32, $t (13) = −0.50, p > 0.62$). The latter was also true for the intermediate group: there was no significant difference between their own embedded interpretation in the baseline condition and the Superiority condition, $t (22) = −0.85, p > 0.40$. According to these comparisons, only native speakers appeared to be sensitive to a contrast between C1 and C2 in the TVJ experiment. However, this was also affected by the fact that the L2 speakers showed lower preference for the embedded reading in C1, an issue we return to later. Crucially, however, advanced L2ers were not significantly different ($p > 0.34$) from the native speaker controls in terms of the number of times that they assigned an embedded reading in C2.

Test items in C3 were like those in C2 except that the embedded reading for the matrix wh-word in these items was predicted to be blocked by a Subjacency violation, instead of a Superiority violation. In this condition, both L2ers and English monolinguals showed a clear preference for the matrix reading of the first (higher) wh-word. Native controls behaved as predicted, as their performance in this condition significantly differed from their own embedded readings in the baseline condition, $t (30) = 7.65, p < 0.001$. The same was true for advanced L2ers ($t (13) = 5.95, p < 0.001$) and intermediate L2ers ($t (22) = 4.11, p < 0.001$). Furthermore, as far as the performance in this condition is concerned, there was no significant difference between native controls and advanced L2ers ($p > 0.49$), even though intermediate L2ers were slightly different from native speakers ($p < 0.05$), in that Intermediate L2 subjects more strongly rejected an embedded reading.

Condition 4, meanwhile, involved items in which the embedded reading for the higher wh-word was predicted to be excluded by both Superiority and Subjacency violations. As we predicted, the embedded reading in this instance for the native control group was also significantly different from their own performance in the baseline condition ($t (30) = 4.81, p < 0.001$). The same pattern was again observed for advanced L2ers ($t (13) = 4.17, p < 0.001$), but not for the intermediate group ($t (22) = 0.45, p > 0.65$). Therefore, only advanced L2ers and native speakers showed strong sensitivity to violations that blocked the embedded reading in this condition.

3.4. Interim Discussion

Our results on the TVJ experiment show that these L2 English speakers have successfully acquired the principle of Subjacency, as it is evident in their low mean preference for embedded scope readings in C3. Recall that for both advanced and intermediate L2ers, the embedded reading in C3 significantly differed from their own assignment of embedded readings in the no violation condition. This is also consistent with what was found for the native controls in the comparison between these two conditions. Thus, regarding the Subjacency constraint, both L2 groups showed strong evidence of the acquisition of the uninterpretable feature (uwh*) that drives movement in English wh-questions. Still, if Sinhala/English L2ers have acquired the uwh* in the target L2, one would expect them to
show equal sensitivity to Superiority violations, too. However, neither the advanced L2 group nor the intermediate L2 group showed a strong level of sensitivity to Superiority violations in C2: unlike native controls, neither of the L2 groups showed a significant difference in their mean choice of embedded scope between this condition and the baseline condition. Therefore, at least regarding the Superiority condition, our results are consistent with what Hawkins and Hattori (2006) found for Japanese Native Speakers (JSE) acquiring L2 English: JSE did not block embedded readings that violated Superiority as much as native controls did.

However, notice that even native controls in our study have shown weaker sensitivity to Superiority violations (Mean = 0.54, SD = 0.33) than Subjacency violations (Mean = 0.31, SD = 0.23). If native controls were equally sensitive to Subjacency and Superiority constraints in wh-questions, we would not expect to see a difference in their performance in the embedded readings between C2 and C3. However, in our results, this difference proved to be statistically significant, too: (t (30) = 3.96, p < 0.001). We argue that this disparity between the sensitivity to the two constraints resulted from the fact that the test items on Superiority that H&H used in their study (and that we replicated in this experiment) only involved Argument over Adjunct extractions which are acceptable to many native speakers of English (Bošković 1997; Lasnik and Saito 1992; Obata 2008). For instance, in the following sentence, either the argument or the adjunct could be extracted without yielding an ungrammatical reading for different speakers:

(32) a. [CP Where did [TP you [vP read what t]]?]
b. [CP What did [TP you [vP read t] where]]?

Even though the Superiority Condition, as formulated in Chomsky (1973), would predict only (a) in (32) to be grammatical, Obata (2008) argues that the extraction of the argument (what) over the adjunct (where) in (32b) can be grammatical in English. In Obata’s analysis, the argument matches the C head better than the adjunct in terms of the number of features that they share: what carries both case and wh-features while where only carries a wh-feature (Obata also assumes that C is involved in Case feature match/agreement, following (Pesetsky and Torrego 2001). If so, in the following test item on Superiority (Hawkins and Hattori 2006, p. 287), which was modeled in our experiment, too, either answer should in fact be acceptable for an English native speaker:

(33) Who did Sophie’s brother warn <who1> [Sophie would telephone <*who2> when]? 
Answer 1: He warned Norman that Sophie would phone on Friday.
Answer 2: He warned that Sophie would phone Mrs. Smith on Friday.

In contrast, a clearer Superiority violation is observed when an argument in a lower position in the structure is extracted over an argument occupying a higher position.

(34) *What does Siri believe [who [said t]]? 

Due to this difference in grammaticality, a more extensive test on Superiority should include a sample of both kinds of violations. If L2ers, like native speakers, show a difference in their judgments between these two kinds of Superiority violations, that can provide further evidence for their sensitivity to overt wh-movement violations in L2 syntax. We took this into consideration in designing the stimuli for our experiment 2.

4. Experiment 2: Grammaticality Judgment Task

This experiment consisted of a scalar Grammaticality Judgment task in which participants used a five-point Likert scale (1: Strongly Agree, 2: Agree, 3: Neither Agree nor Disagree, 4: Disagree, 5: Strongly Disagree) to evaluate the un/grammaticality of forty-six English sentences presented to them in a random order. Similar to the TVJ task in Experiment 1, the main goal of this experiment was to test the sensitivity of L2ers to Superiority and Subjacency violations associated with wh-interrogatives in English. In addition, this task also tested whether our participants were sensitive to the grammaticality distinction across the two kinds of superiority violations in English wh-questions, as in (32).
4.1. Participants

All the participants who took part in the first experiment participated in this experiment, too.

4.2. Materials and Procedure

This experiment included eight test items each on Superiority (Condition 1) and Subjacency violations (Condition 2) and five items on combined Superiority and Subjacency violations (Condition 3) in English wh-questions. The test also included five grammatical counterparts (control items) to each test condition, as in (37), (40) and (42), and 10 fillers ($n = 46$). The Superiority condition 1 included violations resulting from Argument over Adjunct (AoAJ) extractions (35) (5 items), and Argument over Argument (AoA) extraction (36) (3 items). Examples from each condition are listed below, with their predicted grammaticality judgments:

**Condition 1: Superiority**

(35) ? Who did Sara believe Troy would call when?
(36) *What will Sue say who bought?
(37) Who did the secretary say left when?

**Condition 2: Subjacency**

(38) *What did Bill hear the rumor that Jay won?
(39) *What does Grace like the author who wrote?
(40) Who made the claim that the Queen of England wrote a book?

**Condition 3: Combined Superiority and Subjacency**

(41) *Who did you say when Frank visited?
(42) Who did Jane visit when she went to London?

The test items in all three conditions were created using long distance wh-extraction that was either blocked by a Superiority violation (C1), a Subjacency violation (C2) or both Superiority and Subjacency violations (C3). Participants, in a paper and pencil test, were instructed to read each sentence carefully and indicate to what extent they thought the sentence was grammatically acceptable in English.

4.3. Results

In preparation for the statistical analysis, we computed mean scores for each participant as he/she judged the grammaticality of wh-questions for the three conditions. In order to do this, participants’ judgments on the five-point scale (strongly agree = 1 to strongly disagree = 5) were averaged. Figure 2 shows the mean choices of the answers for the three participant groups.

When both kinds of Superiority violations (Test column in C1 in Figure 1) are considered together, both native controls (Mean = 3.8, SD = 0.96) and L2ers (Adv/L2: Mean = 3.9, SD = 1.0, Inter/L2: Mean = 3.8, SD = 0.67) showed very similar rates of rejection of ungrammatical sentences resulting from Superiority violations. Regarding control items in C1, English monolinguals (NS mean = 2.8, SD = 1.0) and L2ers (Adv/L2: Mean = 3.6, SD = 1.2, Inter/L2: Mean = 3.6, SD = 0.80) were slightly different only in that English monolingual showed a lower rate of acceptance of arguably grammatical counterparts to Superiority violations.

In the test of Subjacency (C2), both English monolinguals and L2ers performed very similarly in both the test and control conditions, in rejecting the test sentences with Subjacency violations. All three groups are in the higher end of the five-point acceptability scale: English monolinguals (Mean = 4.5, SD = 0.49), advanced L2ers (Mean = 4.5, SD = 0.46), and intermediate L2ers (Mean = 4.1, SD = 0.72) all strongly and consistently rejected question sentences with Subjacency violations in this experiment. A very similar pattern is observed in C3 (Subjacency + Superiority violations) for both L2ers and native controls. Finally, notice that for all three groups, the mean difference between test vs. control items in C1 is
not as substantial as what is observed in the other two conditions, when the two types of Superiority conditions are considered together.

![Figure 2](image-url)

Figure 2. Mean grammaticality judgment scores for all three participant groups, NS (Native English), AP (L2 Advanced Proficiency), and IP (L2 Intermediate Proficiency), in ungrammatical test sentences vs. grammatical control sentences.

Given the pattern that we have observed in descriptive statistics, we submitted these mean judgment scores to a repeated measures ANOVA with proficiency (3 levels: Native, Adv/L2, and Inter/L2) as between-subject factor, condition (3 levels: Superiority, Subjacency, combined), and grammaticality (2 levels: test vs. control) as within-subject factors. Both by-participant and by-item analyses showed significant effects of grammaticality (F1 (2, 64) = 231.08, p < 0.001, F2 (1, 4) = 386.86, p < 0.001), condition (F1 (2, 29) = 10.14, p < 0.01, F2 (2, 3) = 9.93, p < 0.04), interactions of proficiency and grammaticality (F1 (2, 65) = 15.27, p < 0.001, F2 (2, 3) = 209.79, p < 0.001), condition and grammaticality (F1 (2, 64) = 231.08, p < 0.001, F2 (2, 3) = 665.76, p < 0.001), and a three-way significant interaction between condition, grammaticality, and proficiency (F1 (4, 12) = 5.47, p < 0.001, F2 (4, 16) = 8.13, p < 0.001). However, proficiency alone (F1 (2, 65) = 0.72, p > 0.48, F2 (2, 3) = 4.1, p > 0.13) was not significant either in the participant or the item analyses. We take these results to imply that our participants in general judged grammatical conditions (test) differently from ungrammatical conditions (control), though at least one group showed a different level of sensitivity to the grammaticality distinction (test vs. control) in one or more conditions. In order to further explore the nature of this interaction involving proficiency, we conducted 3 (proficiency levels) \times 2 (grammaticality: test vs. control) repeated measures ANOVAs for each condition separately.

As far as C1 (Superiority violations) is concerned, the interaction between proficiency and grammaticality proved to be significant (F1 (2, 65) = 10.21, p < 0.001, F2 (2, 3) = 19.80, p < 0.01). Proficiency had a main effect only in the item analysis (F1 (2, 65) = 1.75, p > 0.18, F2 (2, 3) = 8.95, p < 0.05), while grammaticality was only significant in the participant analysis, F1 (2, 65) = 26.50, p < 0.001, F2 (1, 4) = 1.76, p > 0.25. Subsequent post hoc (paired t-test) comparisons revealed that in C1, the grammaticality distinction (test vs. control) was significant for the native controls, t (30) = 6.87, p < 0.001, but not for the advanced L2 group, t (13) = 1.49, p > 0.15, or the intermediate L2 group, t (21) = 1.33, p > 0.19. Given this difference, we carried further analysis of the results in C1 considering the difference between the two types of superiority violations (argument-over-argument and argument-over-adjunct) as we discuss later in this section.
Meanwhile, C2 (Subjacency) also revealed an interaction of proficiency and grammaticality, $F_1(2, 65) = 5.30, p < 0.001$, $F_2(2, 8) = 14.56, p < 0.002$ (due primarily to the results from Inter/L2 subjects, as we return to below). The effect of grammaticality also proved to be significant, $F_1(1, 65) = 1063.31, p < 0.001$, $F_2(1, 4) = 210.82, p < 0.001$. However, crucially, in this condition, L2 groups, like native controls, showed strong sensitivity to the grammaticality distinction, as each group judged test items to be significantly worse than control items (Adv/L2: $t(13) = 23.17, p < 0.001$; Inter/L2: $t(21) = 13.36, p < 0.001$; Native: $t(30) = 27.88, p < 0.001$), as we discussed above.

In C3 (combined Superiority and Subjacency), we found a similar interaction between proficiency and grammaticality, $F_1(2, 65) = 13.95, p < 0.001$, $F_2(2, 3) = 28.88, p < 0.01$ (due to how Inter/L2 subject performed, as further discussed in the next paragraph). Despite this, for each of the three groups, the difference between grammatical and ungrammatical items was significant, Native: $t(30) = 21.29, p < 0.001$, Adv/L2: $t(13) = 9.74, p < 0.001$, Inter/L2: $t(21) = 12.61, p < 0.001$. That is, each group clearly rejected the test items involving subjacency and superiority violations, as opposed to the grammatical control items. Further analyses considering both C2 and C3 showed that the interaction between proficiency and grammaticality was significant only in C2 and C3, because the intermediate group performed slightly differently from the other two groups in their judgment of both test and control items. Despite this difference, the intermediate group was also sensitive to the grammaticality distinction in both C2 and C3.

Summarizing our results on the three conditions so far, native controls, as predicted, showed sensitivity to the grammaticality distinction in all three conditions. Meanwhile, L2ers were sensitive to this distinction only in C2 (Subjacency) and C3 (combined Subjacency and Superiority). However, we return below to C1 results and show that L2ers were in fact sensitive to a more fine-grained distinction among the test items in that condition.

5. Discussion and Conclusions

This study aimed at re-evaluating a prediction made by Representational Deficit (RD) Accounts, in particular, the Interpretability Hypothesis (Hawkins and Hattori 2006; Tsimpli 2003; Prentza 2014; Prentza and Tsimpli 2013; Tsimpli and Dimitrakopoulou 2007) concerning the role of uninterpretable syntactic features in adult L2 grammars. According to this hypothesis, after a critical period (the acquisition of feature specifications for one’s L1), L2ers do not have access to the complete inventory of uninterpretable syntactic features made available by UG.

Partially following aspects of the experimental design from Hawkins and Hattori’s (2006) study with Japanese Speakers of English (JSE), this study investigated the acquisition of the uwh* feature and relevant constraints in English overt wh-movement questions by Sinhala Native Speakers acquiring L2 English in Sri Lanka. If the predictions made by the RD account in Hawkins and Hattori (2006) were satisfied, the acquisition of the uninterpretable feature (uwh*) that drives movement in English wh-questions would be expected to be substantially difficult or inaccessible for Sinhala Native Speakers acquiring L2 English, in the same way it was argued to be problematic for Japanese L1-English L2ers in Hawkins and Hattori (2006). This is due to the typological distinction regarding wh-questions between Sinhala and English, on the one hand, and the corresponding similarity between Sinhala and Japanese, as discussed in the section on the syntax of wh-questions in English and Sinhala.

However, contrary to the predictions made by the RD/Interpretability Hypothesis, converging evidence from the two experiments in this study clearly shows that at least our advanced L2ers have successfully acquired overt wh-movement in English, implying that they have acquired the uninterpretable feature (uwh*) that is argued to trigger this overt movement in English. This is supported by the strong sensitivity of the L2 learners to locality constraints (Subjacency and Superiority) associated with overt wh-movement in the target L2 English grammar. Let us consider evidence from subjacency violations. According to our discussion on Sinhala, subjacency is a constraint that does not apply to wh-questions...
in Sinhala, i.e., in Sinhala, wh-phrases are allowed in a variety of syntactic islands (e.g., Gair 1983). Hence, similar to the Indonesian L1-English L2 group studied by Martohardjono (1993), one can argue that in acquiring the Subjacency constraint in L2 English, Sinhala native speakers are faced with a genuine poverty of the stimulus problem: they would not have access to the uninterpretable uwh* feature in their L1 Sinhala, and the English L2 input does not provide (negative) evidence about the application of the Subjacency and Superiority constraints. Results of our two experiments show that our Sinhala L1-English L2ers have been able to successfully overcome this problem in acquiring overt wh-movement in English that is sensitive to the application of Subjacency violations, implying that they have acquired the new uninterpretable feature specification (uwh*) that drives overt wh-movement. For example, in Experiment 1, the Subjacency constraint (condition 2) clearly blocked an embedded reading for the displaced wh-phrase in the judgments by both L2 groups and English native speakers. In addition, the L2 speakers’ performance in this condition matched what was observed for the native controls. Further, in Experiment 2, both L2 groups, like English native speakers, showed a significant difference between grammatical (test) items and ungrammatical (control) items in the Subjacency condition.

To the extent that parameter settings are rooted on the feature specification of different syntactic categories, further evidence for such parameter resetting, involving the acquisition of the uwh* feature in the L2 grammar, comes from the L2ers’ sensitivity to Superiority violations. As supporting evidence, results from our Grammaticality Task/Experiment 2 revealed that advanced L2ers more strongly rejected argument-over-argument than argument-over-adjunct extractions in Superiority violations in English, showing a contrast equivalent to English native speakers.

Notice that even intermediate L2ers in this study show some evidence of successful acquisition of the relevant uninterpretable syntactic feature in English wh-questions, although they show weaker sensitivity to Superiority violations, unlike advanced L2ers and native controls. In both experiments, Inter/L2 subjects at least show a strong level of sensitivity to Subjacency violations. This could be evidence that their interlanguage grammar is still under development (see Ellis 1985; Long 1992; Selinker 1972, for discussion of this phenomenon). However, as rightly pointed out by Epstein et al. (1996), this does not necessarily imply that their grammar fails to be UG constrained: “Although L2 learners may lag behind native speakers with regard to accuracy rates, their judgments of wh-structures may still derive from their knowledge of UG principles and conform to a pattern predicted by UG” (p. 688). Lardiere (2008) also argues that the ‘variability’ or ‘divergence’ from the target norm is not necessarily a reliable indication that L2ers have failed to reset a parameter in their interlanguage grammars. Hence, more converging evidence is needed before further conclusions can be made regarding the intermediate L2er’s knowledge state in their target L2 English syntax.

One argument that has commonly been made in favor of Representational Deficit (RD) accounts is that L2ers, even those who seem to match native speakers in performance, do not truly have native-like underlying mental representations, i.e., L2ers’ mental grammar for the target language would be impaired in the functional domain due to their restricted access to UG. Hence, in accounting for the target input, they would use alternative strategies borrowed from their L1 grammatical system. For instance, Hawkins and Chan (1997), in their study of Chinese L1/English L2 speakers in Hong Kong, argue that even the advanced L2ers in their study analyzed English relative clauses as non-movement structures derived through a ‘resumptive strategy’ borrowed from their L1. Tsimpli and Dimitrakopoulou (2007) made a similar argument to account for the non-target-like performance of the Greek L1/English L2 learners that they studied in Greece. Meanwhile, Hawkins and Hattori (2006), following Miyamoto and Iijima (2003), argued that their Japanese L1/English L2 speakers have replaced English wh-movement with scrambling, an operation found only in their L1 grammar. Borrowing Bley-Vroman’s (2009) term, let us call these ‘patching strategies’. 
Given these common findings with L2ers in different contexts (e.g., Hawkins and Chan 1997; Hawkins and Hattori 2006; Kong 2017; Prentza 2014; Tsimpli and Dimitrakopoulou 2007), one could consider whether Sinhala/English L2ers in this study are also employing a ‘patching strategy’ to analyze wh-dependencies in English. For the sake of argument, let us assume that these L2ers would not have reconfigured the relevant feature specification in their interlanguage grammars. One possibility, as suggested by H&H for Japanese natives, is that they are analyzing English wh-movement as scrambling, an operation available in their L1. Given the superficial similarity between the two kinds of operations in Sinhala, this would be a possibility. However, if the L1 Sinhala/L2 English learners studied here had transferred scrambling from their L1 syntax to analyze the L2 input (at least as predicted by Schwartz and Sprouse 1996 for early stages of L2 development), we would not expect them to be sensitive to Superiority violations in English. The reason, as we discussed in the section on Sinhala wh-questions, is that Sinhala wh-scrambling, unlike wh-movement in English, is not subject to Superiority violations. The insensitivity to Superiority violations is a main argument used by H&H to support the proposal that Japanese native speakers have not acquired the relevant feature in English. However, contra this prediction, we found in the current study that our advanced L2ers could even distinguish between the two kinds of Superiority violations in English, in the additional analysis carried out as part of Experiment 2.

The assumption that these L2ers analyze wh-movement as a scrambling operation is even more problematic regarding the Subjacency constraint. As we discussed in the section on Sinhala wh-questions, scrambling, unlike wh-movement, does not show island effects in Sinhala. However, even intermediate English L2ers show strong sensitivity to island constraints. Given this, there is evidence from this study against the view that L2ers, especially at the advanced level, would be using a ‘patching strategy’ in their acquisition of the uninterpretable feature specification of English wh-questions that is different from their L1 Sinhala. Furthermore, the Subjacency and Superiority constraints are also very unlikely to have been explicitly taught in ESL classrooms. In addition, they cannot be inferred only from the input, which would require exposure to negative data (grammatical structures). Hence, they must be part of a learner’s acquired unconscious knowledge of the L2 syntax (Campos-Dintrans et al. 2014; Epstein et al. 1996).

In summary, these results indicate native-like underlying mental representations are indeed possible in the domain of uninterpretable syntactic features in L2 syntax, a challenge to RD accounts. Our results with Sinhala/English L2ers are also consistent with other recent studies that report the successful acquisition of new functional features in various L2 contexts (e.g., Campos-Dintrans et al. 2014). Finally, these results can reasonably be interpreted as additional evidence for Full Access to UG principles and constraints in adult L2 syntax (e.g., Epstein et al. 1996; Schwartz and Sprouse 1996; White 2003).

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