Perception of Errors in Second Language Syntax: Acquisition or Processing Difficulties?[1]

Malcolm Awadajin Finney
California State University Long Beach

1. Introduction

Universal Grammar (UG), the mechanism proposed to guide language acquisition (Chomsky 1981, 1982), is argued to be inaccessible in the domains of syntactic movement, word order, and functional categories. The study evaluates knowledge of the constraints governing these domains in English by non-native English speakers (NNES) from a variety of linguistic backgrounds in oral and written grammaticality judgment tasks as well as in written discourse in English. Native English-speaking control subjects were also used in the experiments. A cloze test was also administered to place NNES at three competence levels in English. A questionnaire elicited information on the subjects' linguistic backgrounds, length of stay in an English-speaking community, and active use of English. Analysis of the data evaluated correlation between these factors and knowledge of the constraints in English. The study further examined the extent to which difficulty in the perception of second language syntactic errors may be the result of acquisition or processing difficulties.

2. The Theory of Universal Grammar and First Language Acquisition

The theory of universal grammar (Chomsky 1965, 1981, 1982) postulates that humans are born with an innate knowledge of universal principles of grammar common to all human languages. Equipped with this knowledge, a child is proposed to have the ability to acquire any natural human language regardless of its complexity. Though the grammar of a language is generally very complex, the task of acquisition proceeds with apparently little or no effort. Thus, it seems logical to conclude, Chomsky argues, that the child must be born with some innate mechanism that guides him/her to figure out the rules and principles governing the language that s/he is exposed to. The acquisition of such rules and principles is an unconscious process, and every child, irrespective of social, cultural, or educational background, is expected to acquire linguistic competence - an implicit knowledge of the sounds, structures and meanings - in the language.

3. The Theory of Universal Grammar and Second Language Acquisition

The application of the theory of UG in adult second language (L2) acquisition has been the subject of much debate with researchers often adopting polar views. The idea that human beings are born with innate principles responsible for language acquisition implies that adults are equipped with the capacity for learning any language at any age. UG, an innate knowledge of universal principles of grammar proposed to guide the successful acquisition of a first language (L1), apparently falls short in adult L2 acquisition. Unlike L1 acquisition, adult L2 acquisition very rarely results in native-like proficiency. Fossilization – a stage in which some errors become permanent – is a common occurrence in adult L2 acquisition. Also there is a wide degree of variation in length of, and eventual success in, acquisition across L2 learners. This discrepancy between child and adult language acquisition has raised a number of questions about the nature of adult L2 acquisition in relation to UG. How similar or different is the human language mechanism for L1 and L2? Are there other learning principles or

---

systems other than UG that are employed in the task of L2 acquisition? If the adult L2 learner had access to UG in his acquisition of L1, how accessible is UG in his acquisition of L2?

One proposal is that the general universal principles shared by languages may be applied with some variations (different parameters) in different languages. Errors may result in L2 acquisition if learners ignore these variations and assume that the principles are applied in the same way in both L1 and L2. The goal in second language acquisition is for the L2 learner to become aware of these variations and make necessary adjustments. But this may not be that simple. The adult already has an internalised grammar - L1 grammar - with parameters set at the appropriate values for L1. If faced with variations in L2, the consensus in L2 acquisition studies is that some of these variations will be noticed early and the L2 learner will make the adjustment easily. For other variations (sometimes considered marked), L2 acquisition is proposed to be late and difficult.

This has resulted in the postulation of a number of conflicting proposals. One school of thought adopts the position that UG may be accessible only through L1, and that the adult L2 learner rather employs the use of other learning devices (Bley-Vroman 1989; Clahsen 1988; Clahsen & Muysken 1986,1989; Meisel 1991; Schachter 1988, 1989). Another school of thought argues for the availability and accessibility of UG in L2 acquisition (Corder 1983; Flynn 1983, 1988; Krashen 1981, 1985; Liceras 1986; White 1988, 1989b, 1991), though the degree of accessibility varies from one researcher to another. Others acknowledge the availability and accessibility of UG to adult L2 learners but suggest that UG and other cognitive learning devices may share the task of acquisition (Adjémian & Liceras 1984; Liceras 1985; Felix 1985, 1991).

This study address a popular but controversial position that UG may be accessible in some but not all domains of syntax resulting in persistent errors and difficulty in acquisition of syntactic aspects inherent in the inaccessible domains. Such domains are proposed to include Wh-movement, verb movement (which affects word order), pro-drop, and functional categories (Borer 1983; Felix 1991; Tsimpli & Roussou 1991;White 1988, 1989a).

4. Parameters of UG

Felix (1991) proposes that UG is accessible in both L1 and L2 acquisition, but "operates in different ways and under different limitations" (p.96). He suggests that UG may be accessible in some domains but not in others in adult L2 acquisition; that is, UG is partially accessible. Where UG does not operate, he maintains, the target rules generating a particular structure in L2 are not acquired, and fossilization occurs. Principles that reveal more abstract and invisible properties of a language (e.g. ECP or Subjacency) may be accessible in adult L2 acquisition, while structural domains "in which surface structure clues tends to obscure deeper regularities " (Felix 1991:99), such as word order, may not be accessible. In Wh-movement, different languages constrain which Wh-word/phrase could be moved, which structure Wh-movement occurs in, and the extent to which a Wh-word/phrase is moved away from its underlying position. Word order constraints restrict the position of a complement or adjunct (e.g. adverbials) in relation to the head (e.g. nouns, verbs) that it modifies.

Some researchers have argued that principles of UG are not accessible in the acquisition of functional categories in L2 acquisition, evident in the persistence of errors in the use of functional categories such as determiners/articles and inflection (tense, person, and agreement). Tsimpli & Roussou (1991), adopting the proposal (after Borer 1983) that parameters are associated with functional categories rather than with principles of UG. They argue that functional categories form an independent component of UG – the UG lexicon – which, and not principles of UG, becomes inaccessible to the adult L2 learner. This nonetheless implies that parameter-resetting is absent in L2 acquisition. Parametric variation between L1 and L2 will result in the transfer of the L1 value to L2, at least in the initial stages of L2 acquisition, since the UG lexicon, responsible for parameter-resetting, is not accessible to adults. The eventual adoption of the correct L2 value at an advanced stage in L2 acquisition is attributed to the "general learning mechanisms correctly analysing the input data" at that

stage (Tsimpli & Roussou 1991:152). Principles of UG, they maintain, are available and utilized in L2 acquisition, and they make allowance for grammatical options not present in the L1 grammar to be adopted by the L2 learner.

5. The Study

The study evaluated knowledge of the above constraints governing these domains in English by non-native speakers in oral and written grammaticality judgement tasks as well as in oral and written discourse in English. The study further examined the extent to which they may be the result of processing or acquisition difficulties. In an oral grammaticality judgement task, subjects were presented with 72 sentences, half of which were designed to elicit a grammatical response from subjects. The rest were designed to be ungrammatical as a result of violation of movement and word order constraints. This task was further designed to evaluate subjects' knowledge of these constraints within real time processing limitations. Sentences were presented on audiotape with a five-second interval between sentences. The written version, containing the same sentences, had no time limitation. In both oral and written tasks, subjects were instructed to select one of three choices for each sentence: Acceptable, Not Acceptable, Not Sure. Following are sample test sentences used in the study and the constraints that they violated:

A. Verb Movement
    i.   Adverb Placement
My sister takes regularly the train to San Diego
Tom kicks always the ball over the fence

    ii. Negative Placement
Peter likes not the new movie
The students know not the answer

    iii. Yes/No Question-Formation
Like you your dad's new car?
Saw you my red shirt?

B. Pro Drop
    i.   Null Subject
Is very upset with her friend
Like cereal for breakfast

    ii.   Null Expletives
Is raining all the time in Seattle
Was John who ate the apple

    iii.   Post-Verbal Subjects
Goes to work on Sundays my dad
Lives with his mother Peter

C. Wh-Movement Violations
    i.   Superiority Effects
Dad does not know what who did
Liz cannot recall where what happened

    ii.   Subject Condition
Which game is to play fun?
Which magazine is to read important?

iii.   That-Trace
Which student did Paul think that failed algebra?
Which book did Cliff believe that was written by his professor?

Subjects were further presented with written discourse containing functional category violations and were instructed to identify, by underlining, ungrammatical segments in the discourse. The functional categories included the ungrammatical or improper use or omission of the following: Tense and modals, agreement, plurals, determiners, and prepositions. Subjects were presented with two short narratives and a brief dialogue, which may or may not contain grammatical errors. The subjects were instructed to read them carefully and identify and underline all the errors (if any) found. Subjects were further instructed to rewrite the corrected versions of the narratives and dialogue.

5.1. Selection of Subjects

43 subjects (students at California State University Long Beach) – 10 Native English speakers as control; 11 native Japanese speakers; 7 native Chinese speakers; 3 native Korean speakers, 3 native speakers of Romance languages (2 Spanish, 1 Portuguese); 2 native speakers of Slavic languages (1, Russian, 1 Bulgarian); and 7 native speakers of 7 different Asian languages, categorized as Other Asian – participated the study. Subjects were also categorized by other variables: Competence level in English (Low, Medium, High) determined by a placement test; Length of Stay in an English-speaking country (< 4 years, Between 4 and 7 years, and over 7 years); and Active Use of English (< 4 years, Between 4 and 7 years, and over 7 years).

5.2. Hypotheses

Results were analyzed for correlation between performance and the variables of linguistic background, competence level in English, length of stay in an English-speaking community, and active use of English. The following hypotheses were evaluated:

Hypothesis 1: Accurate perception of errors associated with parameters activated in English will be determined by activation/non-activation of relevant parameters in the subjects' linguistic backgrounds. Instantiation of a parameter at the same setting in L1 and L2 will enhance accurate perception of errors associated with that parameter. Instantiation of different settings or non-instantiation of a parameter in L2 will result in difficulty in perceiving errors associated with that parameter.

Hypothesis 2: Degree of accuracy in perceiving structural errors in English will correlate with the subjects' level of competence in English regardless of whether the parameters associated with the errors are instantiated or not in the learners' linguistic backgrounds.

Hypothesis 3: Subjects' degree of accuracy in perceiving structural errors in English will correlate with their length of stay in an English-speaking community regardless of whether parameters associated with errors are instantiated or not in their linguistic backgrounds. The longer they have resided in an English-speaking community the more accurate their perception of structural errors in English will be.

Hypothesis 4: Degree of accuracy in perceiving structural errors in English will correlate with the subjects' active use of English regardless of whether the parameters associated with the errors are instantiated or not in the learners' linguistic backgrounds. The longer they have been using English actively the more accurate their perception of structural errors in English will be.

Hypothesis 5: Accuracy in perceiving structural errors associated with parameters instantiated in English is not a reflection of the subjects' non-acquisition of the parameter but is conditioned by difficulty in processing English sentences within real time constraints governing conversation. Accuracy in the perception of errors in the written grammaticality judgment task will be significantly higher that accuracy in the perception of errors in the oral grammaticality judgment task.

<u>Hypothesis 6</u>: Difficulty in perceiving errors associated with functional categories (determiners, tense, person, agreement, etc.) in the Error Detection task will support a view of parameters being associated with functional categories.

6. Results and Discussion: Grammaticality Judgment Tasks
6.1. Oral Grammaticality Judgment Task
6.1.1. Effects of Linguistic Background

Evidence of correlation between constraint violations and linguistic backgrounds could be interpreted as evidence for the inaccessibility of UG in the above syntactic domains. The following table presents the means that showed significance on the basis of their linguistic backgrounds:

Descriptives

		N	Mean	Std. Deviation	Std. Error
TESTADV1 Test - (Oral) Verb Movement: Adverb Placement	1 Chinese	7	2.71	1.604	.606
	2 Japanese	11	1.09	1.578	.476
	3 Korean	3	1.33	2.309	1.333
	4 Romance	3	3.00	1.000	.577
	5 Slavic	2	2.00	1.414	1.000
	6 Other Asian	7	2.29	1.704	.644
	7 English	10	3.50	.850	.269
OSUBJEC1 Control - (Oral) Pro-Drop: Null Subject	1 Chinese	7	3.57	.535	.202
	2 Japanese	11	3.55	.820	.247
	3 Korean	3	2.67	.577	.333
	4 Romance	3	4.00	.000	.000
	5 Slavic	2	3.50	.707	.500
	6 Other Asian	7	3.57	.535	.202
	7 English	10	4.00	.000	.000
TESTSUP1 Test - (Oral) Wh-Movement: Superiority Effetcs	1 Chinese	7	2.43	.976	.369
	2 Japanese	11	1.82	1.168	.352
	3 Korean	3	2.00	1.000	.577
	4 Romance	3	3.67	.577	.333
	5 Slavic	2	3.50	.707	.500
	6 Other Asian	7	2.29	1.254	.474
	7 English	10	3.70	.675	.213
TESTTHA1 Test - (Oral) Wh-Movement: That-Trace	1 Chinese	7	1.00	.577	.218
	2 Japanese	11	1.27	1.272	.384
	3 Korean	3	.67	.577	.333
	4 Romance	3	1.00	1.732	1.000
	5 Slavic	2	2.50	.707	.500
	6 Other Asian	7	.14	.378	.143
	7 English	10	2.20	1.229	.389

A one-way ANOVA Test revealed significant differences in performance for the following sub constraints: Adverb Placement – English vs. Japanese subjects; Superiority Effects – English vs. Japanese subjects; and That-Trace Effects – English vs. Other Asian subjects.

6.1.2. *Effects of Competence Level*

Evidence of constraint violations among lower proficient subjects but not among higher proficient subjects could be interpreted as evidence for the accessibility of UG in the above syntactic domains. Persistence of some errors regardless of competence will support the proposal of the inaccessibility of UG in these syntactic domains. The following table presents the means that showed significance on the basis of their competence levels in English:

Descriptives

			N	Mean	Std. Deviation	Std. Error
TESTADV1 Test - (Oral) Verb Movement: Adverb Placement	1	Low	10	1.50	1.434	.453
	2	Med	13	1.85	1.864	.517
	3	High	10	2.50	1.650	.522
	4	Native	10	3.50	.850	.269
TESTNEG1 Test - (Oral) Verb Movement: Negative Placement	1	Low	10	2.60	1.350	.427
	2	Med	13	3.38	.961	.266
	3	High	10	3.70	.949	.300
	4	Native	10	3.80	.422	.133
YESNO1 Control - (Oral) Verb Movement: Yes/No Questions	1	Low	10	2.90	.738	.233
	2	Med	13	3.62	.506	.140
	3	High	10	3.30	.675	.213
	4	Native	10	3.80	.422	.133
OSUBJEC1 Control - (Oral) Pro-Drop: Null Subject	1	Low	10	3.70	.483	.153
	2	Med	13	3.15	.801	.222
	3	High	10	3.80	.422	.133
	4	Native	10	4.00	.000	.000
TESTOSU1 Test - (Oral) Pro-Drop: Null Subject	1	Low	10	2.50	1.354	.428
	2	Med	13	3.46	.660	.183
	3	High	10	3.30	.949	.300
	4	Native	10	3.70	.483	.153
SUPERIO1 Control - (Oral) Wh-Movement: Superiority Effetcs	1	Low	10	2.90	.738	.233
	2	Med	13	3.38	.650	.180
	3	High	10	3.80	.422	.133
	4	Native	10	3.80	.632	.200
TESTSUP1 Test - (Oral) Wh-Movement: Superiority Effetcs	1	Low	10	1.70	.949	.300
	2	Med	13	2.31	1.251	.347
	3	High	10	3.00	.943	.298
	4	Native	10	3.70	.675	.213
SUBCON1 Control - (Oral) Wh-Movement: Subject Condition	1	Low	10	2.90	1.449	.458
	2	Med	13	2.77	1.301	.361
	3	High	10	1.50	1.080	.342
	4	Native	10	2.00	.816	.258
TESTSUB1 Test - (Oral) Wh-Movement: Subject Condition	1	Low	10	2.70	1.337	.423
	2	Med	13	3.15	1.144	.317
	3	High	10	3.60	.699	.221
	4	Native	10	3.90	.316	.100
TESTTHA1 Test - (Oral) Wh-Movement: That-Trace	1	Low	10	1.20	1.135	.359
	2	Med	13	.77	.927	.257
	3	High	10	1.00	1.247	.394
	4	Native	10	2.20	1.229	.389

A one-way ANOVA Test revealed significant differences in performance for the following sub constraints: Adverb Placement – Native English speakers vs. Low proficient subjects; Superiority Effects – Natives vs. Low, High vs. Low and Medium; High vs. Low.

6.1.3. Effects of Length of Stay in an English-Speaking Country

Evidence of correlation between violations and linguistic backgrounds could be interpreted as evidence for the effects of length of stay in and English-speaking country on the development of knowledge of syntactic constraints. The following table contains the means that showed significant difference:

Descriptives

		N	Mean	Std. Deviation
TESTADV1 Test - (Oral) Verb Movement: Adverb Placement	1.0 < 4 years	12	1.25	1.422
	2.0 4 -6 years	11	1.45	1.572
	3.0 7+ years	8	3.38	1.408
	4.0 Native	10	3.50	.850
YESNO1 Control - (Oral) Verb Movement: Yes/No Questions	1.0 < 4 years	12	3.00	.739
	2.0 4 -6 years	11	3.36	.674
	3.0 7+ years	8	3.63	.518
	4.0 Native	10	3.80	.422
OSUBJEC1 Control - (Oral) Pro-Drop: Null Subject	1.0 < 4 years	12	3.42	.669
	2.0 4 -6 years	11	3.36	.809
	3.0 7+ years	8	3.88	.354
	4.0 Native	10	4.00	.000
SUPERIO1 Control - (Oral) Wh-Movement: Superiority Effetcs	1.0 < 4 years	12	3.17	.718
	2.0 4 -6 years	11	3.27	.647
	3.0 7+ years	8	3.88	.354
	4.0 Native	10	3.80	.632
TESTSUP1 Test - (Oral) Wh-Movement: Superiority Effetcs	1.0 < 4 years	12	2.25	1.288
	2.0 4 -6 years	11	2.00	1.183
	3.0 7+ years	8	2.88	.991
	4.0 Native	10	3.70	.675
SUBCON1 Control - (Oral) Wh-Movement: Subject Condition	1.0 < 4 years	12	2.75	1.422
	2.0 4 -6 years	11	2.91	1.221
	3.0 7+ years	8	1.38	1.302
	4.0 Native	10	2.00	.816
TESTSUB1 Test - (Oral) Wh-Movement: Subject Condition	1.0 < 4 years	12	2.75	1.288
	2.0 4 -6 years	11	3.18	1.168
	3.0 7+ years	8	3.63	.744
	4.0 Native	10	3.90	.316
TESTTHA1 Test - (Oral) Wh-Movement: That-Trace	1.0 < 4 years	12	1.00	1.128
	2.0 4 -6 years	11	1.27	1.104
	3.0 7+ years	8	.63	1.061
	4.0 Native	10	2.20	1.229

A one-way ANOVA Test revealed significant differences in performance for the following sub constraints: Adverb Placement – Natives vs. < 4 and 4-7 years, 7+ years vs. < 4 and 4-7 years; Superiority Effects - Natives vs. < 4 years and 4-7 years; That-Trace Effects: Natives vs. 7+ years.

6.1.4. Effects of Active Use of English

Evidence of correlation between constraint violations and linguistic backgrounds could be interpreted as evidence for the effects of length of stay in and English-speaking country on the development of knowledge of syntactic constraints. Following is a table of the means of the subjects:

Descriptives

		N	Mean	Std. Deviation
TESTADV1 Test - (Oral) Verb Movement: Adverb Placement	1.0 < 4 years	12	1.83	1.528
	2.0 4 -6 years	8	1.25	1.581
	3.0 7+ years	9	3.11	1.364
	4.0 Native	10	3.50	.850
NEG1 Control - (Oral) Verb Movement: Negative Placement	1.0 < 4 years	12	3.50	.522
	2.0 4 -6 years	8	3.75	.463
	3.0 7+ years	9	3.67	.707
	4.0 Native	10	3.90	.316
YESNO1 Control - (Oral) Verb Movement: Yes/No Questions	1.0 < 4 years	12	3.00	.739
	2.0 4 -6 years	8	3.38	.744
	3.0 7+ years	9	3.67	.500
	4.0 Native	10	3.80	.422
POSTVSU1 Control - (Oral) Pro-Drop: Post Verbal Subject	1.0 < 4 years	12	3.42	.669
	2.0 4 -6 years	8	3.88	.354
	3.0 7+ years	9	4.00	.000
	4.0 Native	10	3.80	.422
TESTSUP1 Test - (Oral) Wh-Movement: Superiority Effetcs	1.0 < 4 years	12	2.33	1.231
	2.0 4 -6 years	8	2.00	1.069
	3.0 7+ years	9	3.11	.782
	4.0 Native	10	3.70	.675
SUBCON1 Control - (Oral) Wh-Movement: Subject Condition	1.0 < 4 years	12	2.67	1.371
	2.0 4 -6 years	8	3.13	1.126
	3.0 7+ years	9	1.56	1.424
	4.0 Native	10	2.00	.816
TESTSUB1 Test - (Oral) Wh-Movement: Subject Condition	1.0 < 4 years	12	2.75	1.288
	2.0 4 -6 years	8	3.50	.535
	3.0 7+ years	9	3.67	.707
	4.0 Native	10	3.90	.316
TESTTHA1 Test - (Oral) Wh-Movement: That-Trace	1.0 < 4 years	12	1.08	1.165
	2.0 4 -6 years	8	1.00	1.069
	3.0 7+ years	9	.78	1.302
	4.0 Native	10	2.20	1.229

A one-way ANOVA Test revealed significant differences in performance for the following sub constraints: Adverb Placement – Natives vs. < 4 years and 4-7 years; Superiority Effects - Natives vs. < 4 years and 4-7 years.

6.2. Written Grammaticality Judgment Task
6.2.1. Effects of Linguistic Background

Evidence of correlation between constraint violations and linguistic backgrounds could be interpreted as evidence for the inaccessibility of UG in the above syntactic domains. The following table presents the means that showed significance on the basis of their linguistic backgrounds:

Descriptives

		N	Mean	Std. Deviation
TESTOSU2 Test - (Written) Pro-Drop: Null Subject	1 Chinese	7	2.14	1.345
	2 Japanese	11	3.64	.505
	3 Korean	3	4.00	.000
	4 Romance	3	4.00	.000
	5 Slavic	2	4.00	.000
	6 Other Asian	7	3.86	.378
	7 English	10	3.70	.675
TESTOXP2 Test - (Written) Pro-Drop: Null Expletives	1 Chinese	7	2.43	.787
	2 Japanese	11	3.18	.751
	3 Korean	3	2.67	1.528
	4 Romance	3	3.67	.577
	5 Slavic	2	4.00	.000
	6 Other Asian	7	2.86	1.345
	7 English	10	3.80	.632
POSTVSU2 Control - (Written) Pro-Drop: Post Verbal Subject	1 Chinese	7	3.29	.488
	2 Japanese	11	4.00	.000
	3 Korean	3	4.00	.000
	4 Romance	3	4.00	.000
	5 Slavic	2	4.00	.000
	6 Other Asian	7	3.71	.488
	7 English	10	3.80	.422
TESTTHA2 Test - (Written) Wh- Movement: That-Trace	1 Chinese	7	1.00	1.155
	2 Japanese	11	2.09	1.640
	3 Korean	3	1.33	1.528
	4 Romance	3	1.33	2.309
	5 Slavic	2	3.50	.707
	6 Other Asian	7	.86	.690
	7 English	10	3.50	.707

A one-way ANOVA Test revealed significant differences in performance for the following sub constraints: Null Expletives – English vs. Chinese, Slavic vs. Chinese; That-Trace Effects – English vs. Chinese.

6.2.2. Effects of Competence Levels

Evidence of correlation between constraint violations and competence levels could be interpreted as evidence for the temporary but not permanent inaccessibility of UG in the above syntactic domains. The following table presents the means that showed significance on the basis of competence levels:

Descriptives

		N	Mean	Std. Deviation
TESTADV2 Test - (Written) Verb Movement: Adverb Placement	1 Low	10	1.50	1.509
	2 Med	13	3.08	1.256
	3 High	10	2.90	1.663
	4 Native	10	3.80	.422
	Total	43	2.84	1.495
TESTTHA2 Test - (Written) Wh-Movement: That-Trace	1 Low	10	1.20	1.398
	2 Med	13	1.77	1.536
	3 High	10	1.60	1.578
	4 Native	10	3.50	.707
	Total	43	2.00	1.574

A one-way ANOVA Test revealed significant differences in performance for the following sub constraints: Adverb Placement – Natives vs. Low; That-Trace Effects – Natives vs. Low, Medium, and High.

6.2.3. Effects of Length of Stay

The following table presents the means that showed significance on the basis of length of stay in an English-speaking country:

Descriptives

		N	Mean	Std. Deviation
TESTTHA2 Test - (Written) Wh-Movement: That-Trace	1.0 < 4 years	12	2.17	1.403
	2.0 4 -6 years	11	1.55	1.508
	3.0 7+ years	8	1.00	1.414
	4.0 Native	10	3.50	.707
TESTADV2 Test - (Written) Verb Movement: Adverb Placement	1.0 < 4 years	12	2.42	1.443
	2.0 4 -6 years	11	1.73	1.849
	3.0 7+ years	8	3.75	.707
	4.0 Native	10	3.80	.422

A one-way ANOVA Test revealed significant differences in performance for the following sub constraints: That-Trace Effects – Natives vs. 4-6 and 7+ years; Adverb Placement – Natives vs.< 4 and 4-6 years.

6.2.4. Effects of Active Use of English

The following table presents the means that showed significance on the basis of active use of English:

Descriptives

		N	Mean	Std. Deviation
TESTTHA2 Test - (Written) Wh-Movement: That-Trace	1.0 < 4 years	12	2.17	1.403
	2.0 4 -6 years	11	1.55	1.508
	3.0 7+ years	8	1.00	1.414
	4.0 Native	10	3.50	.707
TESTADV2 Test - (Written) Verb Movement: Adverb Placement	1.0 < 4 years	12	2.42	1.443
	2.0 4 -6 years	11	1.73	1.849
	3.0 7+ years	8	3.75	.707
	4.0 Native	10	3.80	.422
TESTOXP2 Test - (Written) Pro-Drop: Null Expletives	1.0 < 4 years	12	3.00	.953
	2.0 4 -6 years	11	2.82	1.079
	3.0 7+ years	8	3.38	.744
	4.0 Native	10	3.80	.632
ADVERB2 Control - (Written) Verb Movement: Adverb Placement	1.0 < 4 years	12	2.17	1.403
	2.0 4 -6 years	11	2.82	1.079
	3.0 7+ years	8	1.38	1.302
	4.0 Native	10	2.00	.943

A one-way ANOVA Test revealed significant differences in performance for the following sub constraints: That-Trace Effects – Natives vs. 4-6 and 7+ years; Adverb Placement – Natives vs.< 4 and 4-6 years.

6.3. Discussion of Results of Grammaticality Judgment Tasks

There was a correlation between performance and linguistic backgrounds very few of the sub constraints. The English controls were significantly more accurate in their judgment of Adverb Placement and Superiority Effects violations than the Japanese subjects, and more accurate on That-Trace Effects than the Other Asian subjects in the oral task. In the written tasks, both the English and Slavic subjects performed significantly better than the Chinese subjects on Null expletives. The English subjects further performed better than the Other Asian subjects on That-Trace Effects. For the rest of the other sub constraints there was no significant difference among the different linguistic groups. Language, then, was not a major factor in determining accuracy of judgment of sentences that violated syntactic constraints in a second language. Of note, also, is that about most of the Japanese speakers were categorized as having low or medium competence in English by the cloze test. Thus, what was apparently a significant difference in performance between the English and Japanese speakers might have been in reality a difference in competence levels. The was no strong support for hypothesis 1, which predicted a correlation between linguistic backgrounds and ease or difficulty in perceiving errors associated with parameters not instantiated or operating differently in the learners' linguistic backgrounds.

Significant correlation between performance and competence levels in English was evident in very few sub constraints in the oral grammaticality judgment task. These include Natives versus Low for Adverb Placement; Natives versus Medium for That-Trace Effects; Natives versus Low and Medium for Superiority Effects; and High versus Low for Superior Effects. In the written grammaticality judgment task, only two sub constraints recorded significant differences in performance: Natives

versus Low in Adverb Placement, and Natives versus Low, Medium, and High in That-Trace Effects. Thus, Low proficient subjects apparently had difficulty with a few constraints compared to native English speakers, and the significant difference in performance between the native English speakers and the non-native English speakers declined as proficiency of the latter increased. Thus, difficulty with parametric variation involving syntactic categories may be evident only in low proficient L2 learners and may disappear with increasing competence in L2. There was weak support for hypothesis 2, which predicted correlation between competence levels and accurate judgment of sentences in the grammaticality judgment tasks. The low proficient subjects were significantly less accurate in their judgments of oral sentences that violated Adverb Placement and Superiority Effects compared to the native English speakers and significantly less accurate in judging sentences with Superiority Effects compared to the high proficient subjects. They were further significantly less accurate in judging written sentences with Adverb Placement and That-Trace Effects violations compared to the native English speakers. In contrast, the medium proficient subjects were significantly less accurate in judging fewer sentences with constraints violations compared to the English subjects. This was evident in two sub constraints in the oral task (Superiority Effects and That-Trace Effects) and in one sub constraint in the written task (That-Trace Effects). The high proficient non-native English-speaking subjects were significantly less accurate in their judgment of only one constraint violation (That-Trace Effects in the written task) compared to the English subjects.

The other two variables used in the study – length of stay in and English-speaking country and active use of English – record very few incidents of significant differences in performance between groups. This was evident in both oral and written tasks for Adverb placement and That-Trace Effects and in the oral task for Superiority Effects. In general there was correlation between length of stay in and English-speaking country and active use of English and accurate judgment of violation of these two constraints. Thus there was weak support for hypotheses 3 and 4, which predicted difficulty in correctly identifying sentences with syntactic constraint violations on the basis of length of stay in an English-speaking country and active use of English respectively.

One of the goals of the study was to evaluate whether difficulty in correctly identifying sentences that violated syntactic constraints was the result of processing constraints or acquisition difficulties. The oral grammaticality judgment task had accompanying time and processing constraints: Subjects were required to make a decision on the grammaticality of each sentence within 5 seconds. In contrast, the corresponding written task had no such constraints. Thus, a significantly less accurate performance on the oral task compared to the written task could be interpreted as evidence of difficulty resulting from the processing constraints of making judgment within a very short time. In the event of no significant difference between both tasks, difficulty could then be attributed to acquisition difficulties, which was confirmed by results of this study. For the most part, in both the oral and written tasks, a paired sample T-test revealed no significant difference in the performance of subjects in all four variables: Linguistic backgrounds, competence levels, length of stay, and active use of English. Thus there was no support for hypothesis 5, which predicted that difficulty in perceiving errors in sentences with syntactic constraint violations was conditioned by difficulty in processing English sentences within real time constraints governing conversation. Accuracy in the perception of errors in the oral grammaticality judgment task was not significantly different from that in the corresponding written task.

7. Results and Discussion: Error Identification Involving Functional Categories

Subjects were required to identify and correct violations involving functional categories (tense and modals, agreement, plurals, determiners, and prepositions) in written discourse: Two short narratives and a brief dialogue. Following are results of the performance of the subjects according to their linguistic backgrounds, competence levels in English, length of stay in an English-speaking country, and active use of English.

7.1. Effects of Linguistic Backgrounds on Functional Category Violations

The following table presents the means that showed significance on the basis of the linguistic backgrounds of the subjects:

Report

LINGBACK		TENSEMOD Tense and Models	AGREEMEN Agreement	PLURALS Plurals	DETERMIN Determiners (Total)	PREPOSIT Prepositions (Total)
1 Chinese	Mean	3.57	3.86	5.57	13.57	3.29
	N	7	7	7	7	7
	Std. Deviation	1.272	2.116	3.207	6.828	1.496
2 Japanese	Mean	3.18	4.18	5.64	9.91	2.55
	N	11	11	11	11	11
	Std. Deviation	1.079	1.250	1.804	5.504	2.018
3 Korean	Mean	3.33	4.00	6.00	9.33	1.67
	N	3	3	3	3	3
	Std. Deviation	1.528	1.000	2.646	7.572	2.887
4 Romance	Mean	4.00	5.33	8.33	21.00	6.33
	N	3	3	3	3	3
	Std. Deviation	1.732	.577	.577	.000	.577
5 Slavic	Mean	4.00	6.00	9.00	21.00	6.50
	N	2	2	2	2	2
	Std. Deviation	1.414	.000	.000	.000	.707
6 Other Asian	Mean	3.57	4.57	6.00	15.00	3.86
	N	7	7	7	7	7
	Std. Deviation	1.512	1.718	1.732	5.477	2.610
7 English	Mean	4.80	6.00	9.00	21.00	6.90
	N	10	10	10	10	10
	Std. Deviation	.632	.000	.000	.000	.316
Total	Mean	3.79	4.77	6.84	15.16	4.28
	N	43	43	43	43	43
	Std. Deviation	1.264	1.493	2.309	6.568	2.520

A one-way ANOVA Test revealed no significant differences in accurate detection involving tense and modals on the basis of linguistic backgrounds. Significant differences were however recorded for all the other functional categories. There was significant correlation between errors and linguistic backgrounds for the following categories and groups (the groups that performed better are mentioned first): For Agreement: English versus Japanese, Slavic versus Japanese. For Plurals: English versus Japanese, Chinese, and Other Asian; Slavic and Romance versus Japanese and Chinese. For Determiners: English versus Chinese and Japanese. For Prepositions: English versus Japanese and Chinese; Romance and Slavic vs. Japanese and Chinese.

There was thus evidence of influence of linguistic background on the use of functional categories. Japanese and Chinese subjects, in whose linguistic backgrounds these functional categories are non-

existent or operate differently, were significantly less successful in correctly identifying functional category violations in English. Other linguistic groups (Romance and Slavic) whose primary languages make use of these functional categories performed significantly better than the Japanese and Chinese subjects and not significantly different from the English subjects in identifying functional category violations. This provided support for hypothesis 6, which predicted that parametric variation between languages, manifested in difficulty in perceiving functional category violations, is associated with functional rather than with syntactic categories.

7.2. Effects of Competence Levels in English on Functional Category Violations

The following table presents the means that showed significance on the basis of competence levels in English:

Report

LEVEL		TENSEMOD Tense and Models	AGREEMEN Agreement	PLURALS Plurals	DETERMIN Determiners (Total)	PREPOSIT Prepositions (Total)
1 Low	Mean	3.30	3.50	4.50	7.70	1.30
	N	10	10	10	10	10
	Std. Deviation	1.160	1.780	2.321	4.968	.949
2 Med	Mean	3.69	4.38	6.15	13.54	3.31
	N	13	13	13	13	13
	Std. Deviation	1.251	1.446	1.908	5.995	1.601
3 High	Mean	3.40	5.30	7.90	18.90	5.90
	N	10	10	10	10	10
	Std. Deviation	1.430	.675	1.197	3.107	1.853
4 Native	Mean	4.80	6.00	9.00	21.00	6.90
	N	10	10	10	10	10
	Std. Deviation	.632	.000	.000	.000	.316
Total	Mean	3.79	4.77	6.84	15.16	4.28
	N	43	43	43	43	43
	Std. Deviation	1.264	1.493	2.309	6.568	2.520

There was significant correlation between errors and linguistic backgrounds for the following categories and groups (the groups that performed better are mentioned first): For Tense and Modals: English versus Low. For Agreement: English versus Low, Medium, and High. For Plurals: English versus Low and Medium; High versus Low. For Determiners: English and High versus Low. For Prepositions: English versus Low, Medium, and High; High versus Medium and Low; Medium versus Low.

There was also evidence of the effects of competence levels in the correct identification if functional category violations. For all of the categories, the low proficient subjects were significantly less successful in identifying functional category violations compared to the English subjects and most of the time compared to the high proficient subjects. Significant differences between the performances of the English and Medium and High groups were lower, especially for the High group. It seems then that competence levels in L2 may play a role in developing accurate knowledge of how functional categories operate in a second language.

73. Effects of Length of Stay in an English-Speaking Country and Active Use of English on Functional Category Violations

The following tables present the means that showed significance on the basis of length of stay in an English-speaking community and active use of English respectively:

Length of Stay in and English-Speaking Country

Report

COMMUNIT		TENSEMOD Tense and Models	AGREEMEN Agreement	PLURALS Plurals	DETERMIN Determiners (Total)	PREPOSIT Prepositions (Total)
1.0 < 4 years	Mean	3.83	3.92	5.08	11.58	2.75
	N	12	12	12	12	12
	Std. Deviation	.937	2.193	2.778	6.543	1.545
2.0 4 -6 years	Mean	3.00	4.64	6.09	9.91	2.36
	N	11	11	11	11	11
	Std. Deviation	1.549	.924	1.514	5.839	2.618
3.0 7+ years	Mean	3.50	4.63	7.75	19.13	5.88
	N	8	8	8	8	8
	Std. Deviation	1.195	.916	1.581	1.642	1.126
4.0 Native	Mean	4.80	6.00	9.00	21.00	6.90
	N	10	10	10	10	10
	Std. Deviation	.632	.000	.000	.000	.316
Total	Mean	3.78	4.76	6.83	14.90	4.27
	N	41	41	41	41	41
	Std. Deviation	1.275	1.513	2.355	6.617	2.560

Active Use of English

Report

ACTIVUSE		TENSEMOD Tense and Models	AGREEMEN Agreement	PLURALS Plurals	DETERMIN Determiners (Total)	PREPOSIT Prepositions (Total)
1.0 < 4 years	Mean	3.92	4.00	5.33	12.08	2.92
	N	12	12	12	12	12
	Std. Deviation	.900	1.907	2.839	6.473	1.621
2.0 4 -6 years	Mean	2.50	4.63	5.63	8.88	1.75
	N	8	8	8	8	8
	Std. Deviation	1.512	.916	1.061	4.549	2.375
3.0 7+ years	Mean	3.56	5.11	8.11	19.33	5.78
	N	9	9	9	9	9
	Std. Deviation	1.236	1.054	.928	1.658	1.302
4.0 Native	Mean	4.80	6.00	9.00	21.00	6.90
	N	10	10	10	10	10
	Std. Deviation	.632	.000	.000	.000	.316
Total	Mean	3.77	4.90	6.97	15.38	4.36
	N	39	39	39	39	39
	Std. Deviation	1.307	1.429	2.311	6.393	2.539

There was significant correlation between errors and length of stay and active English use for identical categories and groups for the most part. The difference in performance between the English subjects and the 4-6 years subjects was marginally significant for Tense and Modals. There was also significant difference in performance for the following categories and groups (the groups that performed better are mentioned first): For Agreement: Natives versus < 4 and 4-6 years. For Plurals: Natives versus < 4 and 4-6 years. For Determiners: Natives 7+ years versus < 4 and 4-6 years. For Prepositions: Natives and 7+ years versus < 4 and 4-6 years.

These statistics indicate that length of stay in a community in which the L2 is used as a primary language and active use of that language could also be determining factors in the development of the knowledge of functional categories. Subjects that have lived in an English-speaking country or have been using English actively for less than 4 years were significantly less accurate in identifying functional category violations compared to the English subjects. Differences became less significant with increasing length of stay or active English use.

8. General Discussion and Conclusion

The grammaticality judgment tasks (oral and written) evaluated subjects accurate judgment of syntactic violations categorized under three general constraints that are proposed in the literature to be syntactic domains in which parametric variations exist among languages. The first constraint – Verb Movement – subsumes three sub constraints on movement used in this study: Adverb Placement, Negative Placement, and movement involving Yes/No Question Formation. The second constraint – Pro Drop – also subsumes three sub constraints used in the study: Presence of a Null Subjects, Null Expletives, and Post-Verbal Subjects in sentences. The final constraint evaluated was Wh-Movement Violation, which also subsumes three sub constraints used in the study: Superiority Effects, The Subject Condition, and That-Trace Effects. The study evaluated the accurate judgment of sentences violating these constraints using four variables: Linguistic background, competence level in English, length of stay in an English-speaking community, and active use of English.

Analyses of the results in general indicated a general knowledge of the above constraints by L2 learners regardless of the variables used in the analysis. There were in particular three sub constraints – Adverb Placement, Superiority Effects, and That-Trace Effects – for which significant differences were recorded. What is apparent then is that in spite of parametric variations in the properties of general syntactic constraints, only some specific structures within those syntactic domains, not the whole domain, may be problematic for L2 learners.

An additional task evaluated the accurate identification of functional categories in two short narratives and a brief dialogue. The L2 learners' performance in this task was significantly less accurate than the English subjects compared to their performance on the grammaticality judgment tasks, which provided support for the view that parametric variation may be associated with functional categories rather than with syntactic categories. Nevertheless, results further indicated that, in addition to linguistic backgrounds, competence levels, length of stay in an L2 community and active use of the L2 all contribute toward the development of the knowledge of functional categories in L2.

9. References

Adjémian, Christian & Liceras, Juana. (1984) "Accounting for Adult Acquisition of Relative Clauses: Universal Grammar, L1, and Structuring the Intake." In F. Eckman, L. Bell, & D. Nelson (eds) *Universals of Second Language Acquisition*. Rowley Massachusetts, Newbury House.

Bley-Vroman, R. (1989) "What is the Logical Problem of Foreign Language Learning?" In S. Gass & J. Schachter (eds) *Linguistic Perspectives on Second Language Acquisition*, Cambridge University Press.

Borer, Hagit. (1983) *Parametric Syntax: Case Studies in Semitic and Romance Languages*. Foris Publications, Dordrecht.

Chomsky, Noam. (1965) *Aspects Of The Theory The Syntax*, The M.I.T. Press.

_____. (1981) *Lectures of Government and Binding*. Foris Publications.

_____. (1982) *Some Concepts and Consequences of the Theory of Government and Binding*. The M.I.T. Press.

Clahsen, H. (1988). "Parameterized Grammatical Theory and Language Acquisition." In S. Flynn & E. O'Neil (eds). *Linguistic Theory in Second Language Acquisition*. Kluwer Academic Publishers.

Clahsen, H. & P. Muysken. (1986) "The Availability of Universal Grammar to Adult and Child Learners – A Study of the Acquisition of German Word Order." *Second Language Research*, Volume 2: 93-119.

_____. (1989) "The UG Paradox in L2 Acquisition." *Second Language Research*, Volume 5: 1-29.

Corder, S. Pitt (1983) "A Role for the Mother Tongue." In S. Gass and L. Selinker (eds) *Language Transfer in Language Learning*. Newbury House Publishers Inc.

Felix, S. (1985) "More Evidence On Competing Cognitive Systems." *Second Language Research*, **1**, 47-72.

_____. (1991) "The Accessibility of Universal Grammar in Second Language Acquisition." In Lynn. Eubank (ed) *Point Counterpoint: Universal Grammar in the Second Language*. John Benjamins Publishing Company.

Flynn, Suzanne. (1983) "Similarities and Differences between First and Second Language Acquisition: Setting the Parameters of Universal Grammar." In D. Rogers & J. Sloboda (eds) *The Acquisition of Symbolic Skills*, Plenum Press.

_____. (1988) "Nature of Development in L2 Acquisition and Implications for Theories of Language Acquisition. In S. Flynn & E. O'Neil (eds). *Linguistic Theory in Second Language Acquisition*. Kluwer Academic Publishers.

Krashen, Stephen. (1981) *Second Language Acquisition And Second Language Learning*, Pergamon Press.

_____. (1985) *The Input Hypothesis: Issues and Implications*, Longmans.

Liceras, Juana. (1985) "The Role of Intake in the Determination of Learners Competence." In S. Gass & C. Madden (eds) *Input in Second Language Acquisition*, Newbury House Publishers Inc.

_____. (1986) *Linguistic Theory and Second Language Acquisition*, Tübingen: Narr.

Meisel, J. (1991) "Principles of Universal Grammar and Strategies of Language Use: On some Similarities and Differences between First and Second Language Acquisition." In Lynn Eubank (ed) *Point Counterpoint: Universal Grammar in the Second Language*. John Benjamins Publishing Company.

Schachter, J. (1988) "Second Language Acquisition and its Relationship to Universal Grammar." *Applied Linguistics*, Volume 9: 219-235.

_____. (1989) "Testing a Proposed Universal." In S. Gass & J. Schachter (eds). *Linguistic Perspectives on Second Language Acquisition*, Cambridge University Press.

Tsimpli, I. & A. Roussou (1991) "Parameter-Resetting in L2?" *UCL Working Papers in Linguistics* **3**: 149-169.

White, Lydia. (1988) "Island Effects in Second Language Acquisition." In S. Flynn & W. O'Neil (eds). *Linguistic Theory in Second Language Acquisition*. Kluwer Academic Publishers.

White, Lydia. (1989a) "The Adjacency Condition on Case Assignment: Do L2 Learners Observe the Subset Principle?" In S. Gass & J. Schachter (eds). *Linguistic Perspectives on Second Language Acquisition*. Cambridge University Press.

_____. (1989b) *Universal Grammar And Second Language Acquisition*, John Benjamins Publishing Company.

_____. (1991) "Second Language Competence versus Second Language Performance." In Lynn Eubank (ed) *Point Counterpoint: Universal Grammar in the Second Language*. John Benjamins Publishing Company.