

# Interpretation of English Reflexives by Child and Adult L2 Learners



Interpretation of English Reflexives  
by Child and Adult L2 Learners

By

Amer Al Kafri

**CAMBRIDGE  
SCHOLARS**

---

P U B L I S H I N G

Interpretation of English Reflexives by Child and Adult L2 Learners,  
by Amer Al Kafri

This book first published 2013

Cambridge Scholars Publishing

12 Back Chapman Street, Newcastle upon Tyne, NE6 2XX, UK

British Library Cataloguing in Publication Data  
A catalogue record for this book is available from the British Library

Copyright © 2013 by Amer Al Kafri

All rights for this book reserved. No part of this book may be reproduced, stored in a retrieval system, or transmitted, in any form or by any means, electronic, mechanical, photocopying, recording or otherwise, without the prior permission of the copyright owner.

ISBN (10): 1-4438-4832-8, ISBN (13): 978-1-4438-4832-9

*To my wife and son,  
to my family,  
to the martyrs of Syria.*



# TABLE OF CONTENTS

List of Figures.....	ix
List of Tables.....	xi
Acknowledgements .....	xiii
Chapter One.....	1
Introduction	
Chapter Two .....	7
Language Acquisition and Reflexive Binding	
2.1 Language Acquisition	
2.2 Properties of Reflexives in English, Arabic and Chinese	
2.3 Conclusion	
Chapter Three .....	50
Language Acquisition and the Age Factor	
3.1 The Critical Period Hypothesis	
3.2 The Fundamental Difference Hypothesis	
3.3 The Domain-by-Age Model	
3.4 Conclusion	
Chapter Four.....	69
Access to UG in L2 Acquisition of Reflexives	
4.1 Generative Views on Access to UG in L2 Acquisition	
4.2 Access to UG in the L2 Acquisition of Reflexives	
4.3 Research Questions and Hypotheses	
Chapter Five .....	102
Methodology	
5.1 Participants	
5.2 Materials	
5.3 Procedure	
5.4 Scoring and Data Analysis	
5.5 Conclusion	

Chapter Six .....	119
Results	
6.1 Proficiency Test Result	
6.2 Simon-Says Game Results (see Appendix G)	
6.3 Age, Years of English Instruction and LOR	
6.4 Conclusion	
Chapter Seven.....	156
Discussion and Conclusion	
7.1 UG Constraints in the L2 Acquisition of English Reflexives	
7.2 Access to UG in the L2 Acquisition of English Reflexives	
7.3 Syntactic Difference between Reflexives and Pronouns	
7.4 Differences and Similarities between Child and Adult L2 Learners	
7.5 Limitations and recommendations for further Research	
7.6 Conclusion	
Appendix A: Simon Says Game .....	166
Appendix B: Project Description.....	168
Appendix C: Consent Form.....	170
Appendix D: Participant's Profile .....	172
Appendix E: Answer Sheet in Simon-Says-Task .....	173
Appendix F: Proficiency Score Results .....	176
Appendix G: Raw Results of the Participants in Simon-Says-Game .....	183
References .....	189
Index.....	197



## LIST OF FIGURES

- Figure 3-1 The relationship between age of arrival in the US and total score correct on English grammar test. (adopted from Johnson and Newport, 1989)
- Figure 3-2 Different AoA groups and their mean scores on the grammaticality judgment task (adopted from Seol, 2005)
- Figure 4-1 The relation between age of arrival (with equivalent exposure) and total correct scores on reflexives (adopted from Lee and Schachter, 1997)
- Figure 5-1 an outline of participants according to their age, L1 and L2
- Figure 5-2 an outline of the Simon-Says game
- Figure 6-1 Normality distribution of all participants' proficiency scores
- Figure 6-2 Correct means of child groups in possessive structure 1 and possessive structure 2
- Figure 6-3 Correct means of adult groups in possessive structure 1 and possessive structure 2
- Figure 6-4 Correct means of participants on prohibiting English reflexives to be bound by long-distance object antecedents
- Figure 6-5 Individual performance of Arabic-speaking children in long-distance object antecedent reflexives, possessive structure 1 and possessive structure 2
- Figure 6-6 Individual performance of Chinese-speaking children in long-distance object antecedent reflexives, possessive structure 1 and possessive structure 2
- Figure 6-7 Individual performance of Arabic-speaking adults in long-distance object antecedent reflexives, possessive structure 1 and possessive structure 2
- Figure 6-8 Individual performance of Chinese-speaking adults in long-distance object antecedent reflexives, possessive structure 1 and possessive structure 2
- Figure 6-9 Correct means of child groups in biclausal finite and biclausal non-finite sentences
- Figure 6-10 Correct means of adult groups on reflexives in biclausal finite and non-finite sentences
- Figure 6-11 Individual performance of Arabic-speaking children in biclausal finite reflexive and biclausal non-finite reflexive sentences
- Figure 6-12 Individual performance of Chinese-speaking children in biclausal finite reflexive and biclausal non-finite reflexive sentences
- Figure 6-13 Individual performance of Arabic-speaking adults in biclausal finite reflexive and biclausal non-finite reflexive sentences
- Figure 6-14 Individual performance of Chinese-speaking adults in biclausal finite reflexive and biclausal non-finite reflexive sentences
- Figure 6-15 Correct means of experimental groups on reflexives and pronouns
- Figure 6-16 Individual performance of Arabic-speaking children in overall reflexive and overall pronoun sentences

- Figure 6-17 Individual performance of Chinese-speaking children in overall reflexive and overall pronoun sentences
- Figure 6-18 Individual performance of Arabic-speaking adults in overall reflexive and overall pronoun sentences
- Figure 6-19 Individual performance of Chinese-speaking adults in overall reflexive and overall pronoun sentences
- Figure 6-20 Correct means of Arabic-speaking groups in reflexive sentences
- Figure 6-21 Correct means of Chinese groups in reflexive sentences

# LIST OF TABLES

- Table 2-1 Percentage of participants' correct responses (Solan, 1987: 195)
- Table 2-2 Participants' responses to reflexive sentences (Chien and Wexler, 1990: 245)
- Table 2-3 Participants' correct responses to gender control sentences (Chien and Wexler, 1990: 245-246)
- Table 2-4 Participants' correct responses to reflexive sentences (Chien and Wexler, 1990: 248-249)
- Table 2-5 Participants' correct responses to gender control (GC) reflexive sentences (Chien and Wexler, 1990: 251-252)
- Table 2-6 Individual performance of children to the judgment task (McDaniel *et al.*, 1990: 134-135)
- Table 2-7 Correct responses of English children to TVJT (McKee, 1992: 34)
- Table 2-8 Correct responses of Italian children to TVJT (McKee, 1992: 33)
- Table 3-1 Twelve rule types used in the grammaticality-judgment-task (Johnson and Newport, 1989)
- Table 3-2 Mean scores of non-natives and natives in English (Johnson and Newport, 1989: 78)
- Table 3.3 Mean, standard deviation, and range of correct items on grammaticality judgment test for five age groups (Seol, 2005: 9)
- Table 3-4 Scrambling of definite DP objects over negation (Unsworth, 2005)
- Table 3-5 Scrambling of indefinite DP objects over negation (Unsworth, 2005)
- Table 3-6 Accuracy of verb placement for each test condition (Blom, 2008: 287)
- Table 3-7 Accuracy of verb inflection in 2SG and 3SG conditions (Blom, 2008: 291)
- Table 4-1 Responses of acceptance of every type of antecedents (Thomas, 1995)
- Table 4-2 Percentages of correct responses on interpretation of English reflexives (Yip and Tang, 1998)
- Table 4-3 Acceptance of long-distance antecedents from embedded finite clauses (Yuan, 1998)
- Table 4-4 Percentages for the acceptance of every type of binding in the truth-value-judgment task (Al-Kafri, 2008)
- Table 4-5 Correct judgments of participants in the grammaticality-judgment-task (Al-Kafri, 2008)
- Table 4-6 Correct acceptance of local binding in picture-identification-task (Bennett, 1994)
- Table 4-7 Correct acceptance of local binding in multiple choice comprehension task (Bennett, 1994)
- Table 4-8 Percentages of participants' acceptance of local/long distance antecedents in biclausal sentences (Finer and Broselow, 1986)

Table 4-9 L2 learners' responses on finite and infinitival domains (Hirakawa, 1990)

Table 4-10 Participants' classification according to the three types of binding (MacLaughlin, 1998)

Table 4-11 Age groups and number of participants (Lee and Schachter, 1997: 348)

Table 4-12 Correct responses of participants to test items (Lee and Schachter, 1997: 352)

Table 4-13 Group results of accuracy from a picture-truth-value-judgment task (Lee, 2005)

Table 4-14 Properties of reflexives in English, Arabic and Chinese

Table 5-1 Background information on participants

Table 6-1 Background information on participants

Table 6-2 Participants who achieved the acquisition criterion in reflexive and pronoun sentences

## ACKNOWLEDGEMENTS

I would like to thank my Ph.D. supervisor, Prof. Martha Young-Scholten for her great patience and valuable advice. Without her valuable guidance and advice, I would not be able to complete this thesis. Her professional supervision will surely have great impact on me as a future researcher.

I also would like to thank my second supervisors: Dr. Dimitra Kolliakou, Dr. Hannah Sowden and Dr. Cristina Dye. Every one of them has provided me with the necessary linguistic and research tools that will be necessary for my career.

Many thanks are also extended to my internal and external examiners, Dr. Melinda Whong and Dr. Geoffrey Poole, whose valuable comments and advice encouraged me to publish this thesis.

Last but not least, sincere thanks are due to all the participants who kindly agreed to participate in my study. Without their valuable help, this work would not have been completed.



# CHAPTER ONE

## INTRODUCTION

The fact that children acquire their native language in a relatively short period of time has bewildered linguists and others for several decades. Linguists wonder how children can acquire the complicated system of language in a very short period, and what type of mechanism is involved in language acquisition (Chomsky, 1981/1986). Several theories and hypotheses have been proposed to account for language acquisition. Two dominant approaches in this regard are: Usage-Based-Approaches and Generative Approaches. The proponents<sup>1</sup> of each approach have proposed their assumptions and empirical evidence to support their claims on the nature of linguistic knowledge and how it is acquired.

Generative grammarians argue that linguistic cues in input are insufficient to construct a grammar, and that an innate specific linguistic knowledge called Universal Grammar (UG) should be involved to help children acquire their mother tongue. Otherwise, children will form incorrect grammar that cannot be corrected even if we try our best efforts to teach them the grammatical form of our language:

- (1-1) Child: Nobody don't like me.  
Mother: No, say "Nobody likes me."  
Child: Nobody don't like me.  
[dialogue repeated eight times]  
Mother: Now, listen carefully, say "NOBODY LIKES ME."  
Child: Oh! Nobody don't likeS me.

(McNeill 1966 cited in Pinker, 1991: 12)

The function of UG is to constrain the grammar of children and provide a theory space which allows children to acquire their language from the inconsistent linguistic input (Schwartz and Sprouse, to appear). In

---

<sup>1</sup> For Usage-Based-Approaches, see (Skinner, 1957/74; Plunkett, 1998; Goldberg, 2003; Ellis, 2007; O'Grady, 2008). For Generative Approaches, see (Chomsky, 1959/65; Chomsky, 1981/86; Chomsky, 1995/2004; among others).

other words, the availability of UG to children makes them consider only structure-dependent-rules in their analysis of the linguistic input.

Researchers have not only focused on first language acquisition but also on second language acquisition which, they argue, is more complicated than first language acquisition because different factors are involved in second language acquisition (Herschensohn, 2007). For example, researchers wonder what roles UG, age and L1 influence have in second language acquisition.

This thesis addresses the above issues by investigating the acquisition of English reflexives by L2 learners. Chomsky (1981) defines binding as a set of restrictions that determine the relation between nominal expressions within a sentence. Chomsky (1986) formulated these restrictions in a theory called the Standard Binding Theory:

**(1-2) Standard Binding Theory (Chomsky, 1986: 166)**

- A. An anaphor is bound in a local domain
- B. A pronominal is free in a local domain
- C. An r-expression is free (in the domain of the head of its chain)

Example (1-3) below illustrates the restrictions of principles A, B and C, respectively:

- (1-3) a. John<sub>j</sub> said Jack<sub>i</sub> likes himself<sub>i/\*j</sub>.  
 b. John<sub>j</sub> said Jack<sub>i</sub> likes him<sub>\*i/j</sub>.  
 c. He<sub>i</sub> said Jack<sub>\*i</sub> is happy.

The relation between nominal expressions above is illustrated through the use of subscripted notations. As is shown in (1-3a), the reflexive pronoun *himself* can refer to *Jack* because it is within the local domain of the reflexive, but it cannot refer to the subject of the main clause *John* because it is outside the local domain. The personal pronoun *him* in (1-3b), in contrast, cannot refer to the subject of the embedded clause *Jack* because it is within the local domain of the pronoun, but *him* can refer to *John* because it is not in its local domain. As for the r-expression *Jack* in (1-3c), it should be free so it cannot refer to the subject of the main clause *he*.

As said before, this thesis focuses on the interpretation of English reflexives by L2 learners. Reflexive binding is researched in this thesis because, as argued in chapter two, it is so complicated that it is difficult to make a case that its acquisition is not under-determined by the input (Crain



and Pietroski, 2002). In other words, it is difficult for language learners to construct a grammar of reflexive binding by relying on linguistic input alone. Instead, a specific linguistic knowledge is involved in the acquisition of reflexives as is discussed in chapter two. The argument is that if the interpretation of reflexive binding is under-determined by input, and L2 learners apply the constraints that generative grammarians ascribe to UG, this would indicate that UG is operative in the interlanguage grammar of L2 learners.

L2 learners in this study were of two L1s, Arabic and Chinese, acquiring English as their second language. Such a choice of languages involved in the study is important for comparative reasons. That is, English and Arabic share the same grammar of reflexive binding in terms of domain and orientation (Kremer, 1997). As is shown in (1-4) below both languages allow only local binding of reflexives (domain), and reflexives in Arabic and English can be bound by subject or object antecedents (orientation):

- (1-4) ḥattā ekšifa-hu<sub>i</sub> -l-batal<sub>j</sub> 'amāma nafs-a-hu<sub>j/i</sub>  
 so.that reveals.3msg-him the-hero before SELF-NOM-him  
 “so that the hero reveals him before himself”

(Kremer, 1997)

Both of the subject *-l-batal* ‘the hero’ and the object *hu* ‘him’ of the clause locally c-command the reflexive *nafs-a-hu* ‘himself’, and both of them can function as an antecedent for the reflexive.

Chinese is different from English and Arabic in the fact that it has two types of reflexives: long-distance *ziji* ‘self’ and local *ta ziji* ‘himslef’. *Ziji* can be bound by only c-commanding subject antecedents in a local or long-distance domain, whereas *ta ziji* is similar to reflexives in English and Arabic in the fact that it can be bound by only local subject or object antecedents.

- (1-5) Zhangsan<sub>i</sub> renwei Lisi<sub>j</sub> zhidao Wangwu<sub>k</sub> xihuan ziji<sub>i/j/k</sub>/ ta ziji<sub>i\*/j\*/k</sub>  
 Zhangsan thinks Lisi knows Wangwu likes self he-self  
 “Zhangsan thinks that Lisi knows that Wangwu likes himself”

(Progovac, 1993: 757)

In (1-5), the local reflexive *ta ziji* can be bound by only the local embedded subject *Wangwu*, but not by *Lisi* or *Zhangsan* because both of

them are outside the local domain of the reflexive. *Ziji*, in contrast, can be bound by *Wangwu*, *Lisi* or *Zhangsan*. All these facts about reflexives in the three languages will be discussed in detail in chapter two.

Based on the above mentioned differences/similarities between reflexives in the three languages, a study on the interpretation of English reflexives by L1 Chinese-speakers and Arabic-speakers can answer the question whether UG is available to L2 learners via the L1 transfer, or they still have access to UG in L2 acquisition. That is, if Arabic-speakers achieve native-like performance in the interpretation of English reflexives while the Chinese-speakers do not, such results would support the view that UG is available to L2 learners via the L1 transfer. The Arabic-speakers achieve native-like performance because they transfer the values of the binding parameter in their L1 which is the same in English so that they achieve native-like performance in the acquisition of English reflexives. The Chinese-speakers, in contrast, transfer the values of the binding parameter in their L1 which is different from English so that they could not achieve native-like performance in the acquisition of English reflexives. However, if both Arabic-speakers and Chinese-speakers achieve native-like performance in the acquisition of English reflexives, such results would indicate that UG is operative in the interlanguage grammar of L2 learners and they still have access to UG because they, especially the Chinese-speakers, were successful in resetting the values of their L1 binding parameter to that of English reflexives.

In addition to L1 differences between participants in this study, there is age difference as well. This study is conducted on child and adult L2 learners of English. Therefore, there will be child and adult Chinese-speakers, child and adult Arabic-speakers and child and adult control groups. The inclusion of such groups in the study, as discussed later, is to see whether access to UG in L2 acquisition is a matter of UG differences or age differences (Schwartz, 2003). In other words, is it the case that adult L2 learners do not have access to UG in L2 acquisition, or access to UG in L2 acquisition is restricted to some modules (e.g. syntax)? All of these issues about the roles of UG and age in L2 acquisition will be discussed in detail in chapters two and three. All in all, this study addresses the following research questions:

(1-6)

- 1- Will L2 learners apply UG constraints in second language acquisition?
- 2- Will L2 learners reset their binding parameter to the values of the local binding of English reflexives?

- 3- Will L2 learners differentiate between the syntactic properties of lexical items?
- 4- Will there be any difference between child and adult L2 learners in the acquisition of English reflexives? (With respect to 1, 2 and 3.)

The first research question investigates whether L2 learners apply UG constraints in the acquisition of English reflexives. The second research question addresses the issue of access to UG in the acquisition of English reflexives. In other words, it investigates whether UG is available to L2 learners via the L1 transfer or access to UG in L2 acquisition. The third research question is related to L2 learners' knowledge of the fact that reflexives in English are locally bound by c-commanding antecedents and personal pronouns are locally free. In this thesis, it is argued such knowledge is important to the findings in research questions one and two. The fourth research question addresses the issue of age differences in the L2 acquisition of English reflexives. All of these research questions and their hypotheses and implications are discussed in detail in chapter three.

The outline of the thesis goes as follows: chapter one is a general introduction to the study. Chapter two discusses the linguistic assumptions and empirical evidence of Usage-Based-Approaches and Generative Approaches with regards to language acquisition, in general, and the interpretation of reflexives, in particular. The discussion shows many aspects of languages, for example reflexive binding, are underdetermined by input and a specific linguistic mechanism is involved to help learners acquire the grammar of their language. Adopting Generative Grammar as a theoretical background for this thesis, age effects on access to UG in first and second language acquisition are discussed in chapter three. Chapter four presents different views on access to UG in second language acquisition and reviews previous studies on the acquisition of reflexives by L2 learners. The review shows that the question of access to UG by adult L2 learners is still under debate, and a comparison between the performance of child and adult L2 learners in the acquisition of reflexives is required to cast new light on this debate. At the end of chapter four, research importance, questions and hypotheses are introduced.

Chapter five discusses the methodology of this study in terms of participants' selection, materials used, procedures followed and data analysed. Chapter six presents the results of the study as group and individual results to give comprehensible interpretation of data. Finally, chapter seven discusses the results of the study with regards to previous studies and theories. It shows that the grammar of adult L2 learners is

constrained by UG and they can have full access to UG in advanced stages of L2 acquisition.

## CHAPTER TWO

### LANGUAGE ACQUISITION AND REFLEXIVE BINDING

Language acquisition from a generative point of view will be discussed in this chapter. First of all, Poverty of Stimulus will be discussed, taking reflexive binding as an example of POS. The discussion shows that the grammar of reflexive binding is so complicated that it is difficult to make a case that its acquisition is not underdetermined by input and hence UG must be involved. In this regard, two main streams, Usage-Based-Approaches and Generative Approaches, have tried to account for the distribution of reflexives and their antecedents and show how children can acquire the properties of reflexives. The discussion shows that generative grammarians present a plausible theoretical account and empirical evidence that shows knowledge of binding principles and constraints might be innate. In particular, the Standard Binding Theory (Chomsky, 1986), the Governing Category Parameter (Wexler and Manzini, 1987) and the Relativized Subject Approach (Progovac, 1993) are discussed. As for the empirical evidence, it shows that the results of L1 studies support the view that knowledge of the syntactic principles involved in reflexive binding might be innate and L1 children fully master the interpretation of reflexives by the age of six (Wexler and Chien, 1985; Chien and Wexler, 1987; Solan, 1987; Chien and Wexler, 1990; McDaniel, Crains and Hsu, 1990; McKee, 1992; among others). As English, Arabic and Chinese are involved in this thesis, the properties of reflexives in these three languages are presented from a general generative point of view.

#### **2.1 Language Acquisition**

Language acquisition, the subject of continuous debate about how humans acquire a language, has given rise to many theories in L1 acquisition. Although these theories have rendered different claims about the development of language, all of them share the same goal which is to

account for how children learn a language in a relatively short period of time.

Chomsky (1995), who argues for a specific internal linguistic knowledge (Language Faculty) involved in language acquisition, points out that research on language acquisition should focus on finding an answer to the following two main questions (Chomsky, 1995: 1):

- (1) What are the general conditions that human language faculty should be expected to satisfy?
- (2) To what extent is the language faculty determined by these conditions, without special structure that lies beyond them?

Chomsky (1995) points out that any answer to these two questions should consider which conditions are imposed on the language faculty, its relation with other cognitive systems of the human mind, and its respect of the conceptual naturalness (e.g. economy, simplicity, non-redundancy and symmetry). If generative researchers can provide logical answers to these important questions, they will be able to give an image about language as a “perfect system” that guides the child in the process of L1 acquisition (Chomsky, 1995). In contrast, non-generative grammarians claim that language is acquired by using general cognitive mechanisms to analyse input and induce grammar. As such, no internal specific linguistic mechanism is involved in language acquisition (Plunkett, 1998; Goldberg, 2003; Ellis, 2007; O’Grady, 2008). Any discussion to support any of these two contradictory views should give a plausible account to the logical problem of language acquisitions, Poverty of Stimulus.

### **2.1.1 Poverty of Stimulus**

The logical problem of language acquisition is stated by Hornstein and Lightfoot (1981) who claim that people have much knowledge about the structure of their language although they do not have direct evidence in the input to guide them to that knowledge. Similarly, Chomsky (1986) argues that people know so much about the structure of their language despite the very little evidence they are exposed to. In literature on L1 acquisition, this argument appears under different terms: The Projection Problem (Baker, 1979), Plato’s Problem (discussed in Chomsky, 1981), the Poverty of Challenge (Lasnik and Uriagereka, 2008), the Standard Poverty of the Stimulus Argument (Lawrence and Margolis, 2001), and the Logical

Problem of Language Acquisition (Pinker, 2004). In this thesis, this argument will be called Poverty of Stimulus (henceforth, POS).

Baker (1979) discussed POS as the projection problem which lies in the relation between the arbitrary linguistic experience that children have and the resulting adult intuitions. In this regard, linguists question whether it is possible for children to learn the grammar of a natural language just by relying on the general cognitive mechanisms of human beings (Usage-Based-Approaches), or they depend on a specific linguistic mechanism to guide them throughout the acquisition of their L1 (Generative Approaches).

### 2.2.1.1 Poverty of Stimulus: Reflexive Binding as an Example

An example of the POS is the referential relation between nominal expressions, namely reflexives.

(2-1) Jack<sub>i</sub> said that John<sub>j</sub> loves himself<sub>\*i/j</sub>.

The coreferential relation in (2-1) is illustrated by subscripted indices next to each possible antecedent within the sentence. In (2-1), the referential relation between the reflexive *himself* and its possible antecedents is illustrated by the use of subscript notations. As is indicated in (2-1), the English reflexive pronoun *himself* can refer to *John*, but not *Jack*. The important question here is where this knowledge comes from.

If children depend on the human general cognitive mechanism to acquire binding of reflexives, they will learn reflexives in the same way they acquire other skills, such as swimming and running. Proponents of Usage-Based-Approaches, such as Behaviorism (Skinner, 1957/74), Constructionism (Goldberg, 2003), Associative-Cognitive Creed (Ellis, 2007), Emergentism (O'Grady, 2008), and Connectionism (Plunkett, 1998), support such a view and claim that "acquisition of grammar is the piecemeal learning of many thousands of constructions and the frequency-biased abstraction of regularities that emerge from learners' lifetime analysis of the distributional characteristics of the language input." (Ellis, 2002:144). In the case of the example mentioned in (2-1) adoption of a learning strategy, such as a linear order strategy which states that the closest NP can be an antecedent for the reflexive would result in an inappropriate interpretation of (2-2):

(2-2) The son<sub>i</sub> of Jack<sub>j</sub> pointed to himself<sub>i/\*j</sub>.

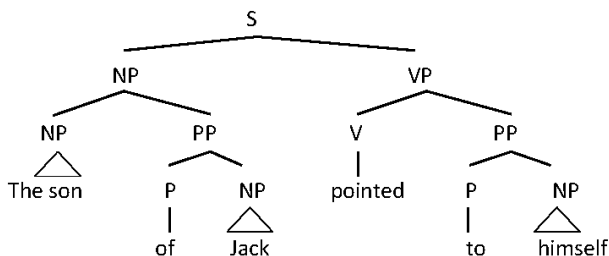
As is shown in (2-2), a linear order strategy cannot work out because the reflexive *himself* does not refer to the closest NP *Jack*, but it refers to the NP *The son*. Such inappropriate interpretation of reflexives would result if we assume children overgeneralize in the acquisition of reflexives. However, Lightfoot (2005) argues overgeneralization in the case of reflexive binding does not work, and it is very difficult for children to retreat from an inappropriate overgeneralization such as (2-2) above because there is no negative evidence or parental feedback provided to correct them. Lightfoot points out the majority of corrective feedback documented was in cases of inflectional morphology (e.g. *go* and *goed*), but in the case of reflexives it will pass “unnoticed”.

One possible solution to the problem is to postulate an innate knowledge of binding as defined by Chomsky (1981: 184):

- (2-3) An NP *A* is BOUND if and only if there is an NP *B* such that both of the following conditions are satisfied:
- (a) *A* and *B* are coindexed;
  - (b) *B* c-commands *A*;

Coindexation is defined in terms of coreference; we say that *A* is coindexed with *B* if *A* and *B* share the same indices which are commonly used as notations to indicate the relation between nominal expressions (Chomsky, 1981). C-command, however, is still a controversial topic in the literature, yet for our discussion we will adopt the definition used in Chien and Wexler (1987: 30), “In a phrase-marker, node *A* c-commands node *B* if and only if the first branching node which dominates *A* also dominates *B*.” In the case of our example in (2-2), the relation of c-command is illustrated as follows:

(2-4)





As is shown in (2-4), the first branching node S dominates the NP *The son of Jack* and the VP *pointed to himself*. Because the NP *the son* is the head of the NP *the son of Jack*, it c-commands the VP which in turn c-commands the NP *himself*. In this case, the NP *Jack* does not c-command *himself*.

It is not only c-command that defies the linear order strategy, but also the coreference relation between a reflexive and its antecedent/s in long-distance languages where domain exceeds the minimal clause/noun phrase to include the whole sentence. Thus, a reflexive can be coindexed with more than one antecedent outside the minimal clause. Example (2-5) illustrates reflexive binding for Chinese:

- (2-5) Zhangsan<sub>i</sub> renwei Lisi<sub>j</sub> zhidao Wangwu<sub>k</sub> xihuan ziji<sub>i/j/k</sub>.  
 Zhangsan thinks Lisi knows Wangwu likes self  
 “Zhangsan thinks that Lisi knows that Wangwu likes self”  
 (Progovac, 1993)

Moreover, within long-distance reflexives, we have a distinction between two types of reflexives: the first kind takes the whole sentence as a domain for the reflexive, so that the reflexive can be coreferential with more than one antecedent in the higher clause, e.g. *ziji* in Chinese. In the second type, domain closes off with the first finite clause so that domain can overlook non-finite clauses but not finite ones as is the case in Russian:

- (2-6) a. Professor<sub>i</sub> poprosil assistenta<sub>j</sub> [PRO<sub>j</sub> čitat' svoju<sub>i/j</sub> doklad].  
 Professor asked assistant read self's report  
 'The professor<sub>i</sub> asked the assistant<sub>j</sub> to read self's<sub>i/j</sub> report'  
 b. Vanja<sub>i</sub> znaet [čto Volodja<sub>j</sub> I jubits svoju<sub>i/j</sub> ženu].  
 Vanja knows that Volodja loves self's wife

(Progovac, 1993)

The Russian reflexive *svoj* in (2-6a) can exceed the infinitival clause and be coindexed with the matrix subject *Professor*. However, the Russian reflexive *svoju* in (2-6b) can be coindexed only with the subject of the subordinate clause *Volodja*, but not the subject of the main clause *Vanja* because long-distance domain for Russian reflexives closes off with the first finite clause.

According to the observations discussed above, the grammar of reflexive binding is so complicated that it is difficult to make a case that its acquisition is not under-determined by the input (Crain and Pietroski,

2002). However, the majority of L1 studies conducted on children interestingly showed that L1 children above the age of six applied the complex c-command constraint on reflexive binding (Wexler and Chien, 1985; Chien and Wexler, 1987; Solan, 1987; McDaniel, Crains and Hsu, 1990; Chien and Wexler, 1990; Mckee, 1992; among others).

If knowledge of the coreferential relation between reflexives and their possible antecedents is not explicitly taught to children, and children show consistent and systematic knowledge of binding at an early stage of their life, then the important question is: where does knowledge of binding come from? Any answer to this question should show and account for the mechanisms used in language acquisition. In other words, it should show whether first language acquisition involves the same mechanisms used to acquire other human skills (walking, driving or swimming), or if it involves a specific linguistic mechanism used to acquire language. In this regard, two prominent accounts are common in the literature. According to the first account (Usage-Based-Approaches), language can be learned from input without the help of any innate linguistic knowledge. All what is required from the learner is to analyse input and induce cues to form the suitable grammar. The second account (Generative Approaches), on the other hand, supports the view that language is endowed to human beings, and the principles and constraints of UG control the acquisition of L1. Language also cannot be learned from input without the help of UG because information provided by input is either vague or insufficient to form a grammar (Lightfoot, 2005).

The next two sections discuss the assumptions and empirical evidence of Usage-Based-Approaches and Generative Approaches in terms of two points: first, how they theoretically accounted for the distribution of reflexives, and second what empirical evidence they presented to support their accounts. The aim behind this discussion is to choose one of these accounts to be adopted as a theoretical background for this thesis.

### **2.1.2 Usage-Based-Approaches and Reflexive Binding**

The outline of this section is as follows: first, an overview of Usage-Based-Approaches is presented, showing their theoretical views and assumptions on language acquisitions. Second, their reflexive binding account/s is discussed in the light of the POS argument which was mentioned above.

### 2.1.2.1 Overview

In this overview, I classify many approaches, such as Behaviorism (Skinner, 1957/74), Constructionism (Goldberg, 2003), Associative-Cognitive Creed (Ellis, 2007), Emergentism (O'Grady, 2008), and Connectionism (Plunkett, 1998), under the general name Usage-Based-Approaches. All of them support the view that language can be acquired via the use of general cognitive mechanisms to analyse input and formulate grammar.

The earliest views of Usage-Based-Approaches in 1950s considered language as a single form of overt behaviour that needs to be considered in relation "...to the study of human behavior as a whole" (Skinner, 1957: 11). In this regard, Skinner claims that children use the same learning mechanisms that are used by other living beings (e.g., animals), and as such children learn language by 'principles of association' and 'principles of induction' to abstract the language of their community. Another Usage-Based-Approach is proposed by Goldberg (2003) who advocates a Constructionist Approach that relies on general cognitive mechanisms and linguistic input to explain L1 acquisition. She claims that the 'totality' of linguistic knowledge is acquired in the form of constructions- form-meaning mappings. Similarly, Ellis (2007) advocates an Associative-Cognitive-Creed that considers Constructions as the result of form-meaning mappings which are rationally abstracted from the linguistic input. The abstraction of linguistic knowledge depends on different factors such as frequency, recency, and context of constructions. The acquisition of constructions is an "intuitive statistical learning problem." (Ellis, 2007:80).

Another Usage-Based-Approach is Emergentism which also supports the view that language acquisition is driven by input and general cognitive mechanisms. O'Grady (2008: 456) claims that, "language acquisition can be reduced to the use of simple learning mechanisms to extract statistical regularities present in ordinary linguistic input." O'Grady points out that the extraction of regularities of the input can be done via the aid of a processor which is responsible for processing and interpreting linguistic input during the lifespan of language acquisition (e.g., binding account below).

Connectionism is also another approach that is classified under Usage-Based-Approaches. This approach, as Plunkett (1998) points out, supports the view that L1 children acquire their mother tongue by relying on human general cognitive mechanisms to detect cues in the seemingly arbitrary input and extract regularities to construct a grammar.

As can be seen from this quick theoretical review, Usage-based-Approaches generally claim that L1 children can acquire their mother tongue by relying only on input and general cognitive mechanisms without any need of innate linguistic knowledge.

### 2.2.2.2 Binding Account/s of Reflexives

Proponents of Usage-Based-Approaches, according to my knowledge, have not yet focused on complex syntactic linguistic phenomenon, such as reflexive binding. Therefore, it is very hard to find in their literature a complete syntactic account for reflexive binding. The only account that can be found is an Emergentist account by O’Grady (2005).

Before proceeding to O’Grady’s (2005) binding account, it is important to shed light on some of his assumptions. O’Grady (2005) argues that language consists of two components: the Lexicon and the Computational System. The Lexicon is a repository of information for the symbols of language, and it includes important information about lexical items, such as their categories and combinatorial possibilities. For example, a word such as *carry* is a verb with the following information (V= verbal; N= nominal; ag= agent; th= theme):

(2-7) Carry: V, <N N> (e.g., Harry carried the package.)

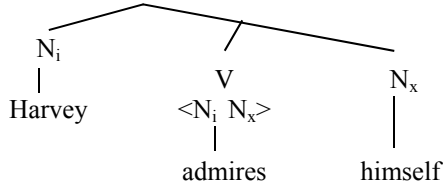
$\begin{array}{ccc} & \uparrow & \text{ag th} \\ & \text{category of the word} & \uparrow \\ & & \text{arguments in the grid form.} \end{array}$

(O’Grady, 2005: 4)

As for the computational system, it has combinatorial mechanisms that work to combine lexical items and resolve dependency between them. Such an aim is achieved via the use of Combine operation and respect of the Efficiency Requirement which states that dependencies between lexical items should be resolved at the first opportunity (O’Grady, 2005). All of these ideas will be clear in our discussion of the resolution of nominal dependencies, namely reflexive binding.

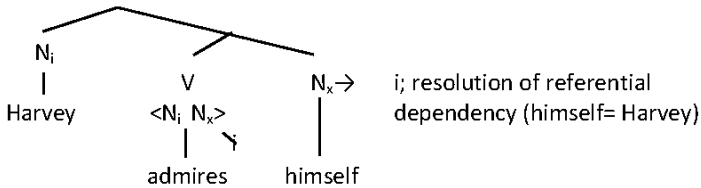
On this view, a sentence such as *Harvey admires himself*, is formed as follows: first, the efficiency processor resolves the dependency of the verb which requires two arguments, so a Combine relation is established between the verb and its first argument *Harvey*. At this point, the index of *Harvey* is copied into the verb grid, and then the verb is combined with its second argument *himself* to resolve the second dependency of the verb as is shown in (2-8).

(2-8)



However, the referential dependency of the reflexive has not been resolved yet, and the Efficiency Requirement imposes that referential dependencies should be resolved at the first opportunity. Therefore, the computational system immediately resolves the referential dependency of the reflexive (represented as  $x$  above) by the time it encounters the index of Harvey (represented as  $i$ ) in the verb grid, and the reflexive copies the index of Harvey as is shown in (2-9):

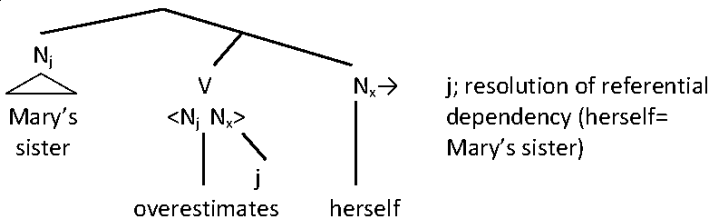
(2-9)

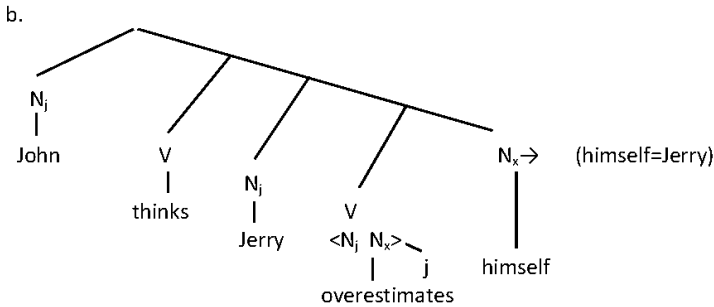


O’Grady (2005) argues his account does not impose any grammatical constraints, such as c-command and locality, on the resolution of the referential dependency of reflexives. That is because locality and c-command are a natural outcome of the work of the efficiency processor, as is illustrated in (2-10a, b) for c-command and locality, respectively:

(2-10)

a.





In (2-10a), O’Grady argues there are independent reasons that prevent the processor from reaching *Mary’s*. That is, the combination starts first between *Mary’s* and the NP *sister* which are then combined with the verb *thinks* as the first argument. Since the NP *Mary’s sister* is the verb first argument, its index (j) is copied to the verb grid, and it is used to resolve referential dependency when the second argument *herself* of the verb is combined. As such, the reflexive *herself* takes the index of the nominal *Mary’s sister*. As for locality in (2-10b), O’Grady explains that the reflexive *himself* cannot refer to the subject of the matrix clause *John* because when the reflexive is combined to the subordinate verb *overestimates*, the grid of the verb will contain only the index of its subject *Jerry*. Hence, *himself* is coreferential with *Jerry*, not *John*. Based on this analysis, O’Grady (2005:36) argues that referential dependency of reflexives is resolved in two steps:

- (2-11) i.  $F \perp N-self_x$   
 $\langle N_i \dots N_x \rangle$   
 (combination of the reflexive pronoun with a functor  
 (verb) whose grid contains the index of another element)  
 ii.  $N-self_{x \rightarrow i}$   
 (resolution of the pronoun’s referential dependency by  
 the index already in the functor’s argument grid)

As for long-distance reflexives, O’Grady (2005) claims that their referential dependency can be resolved in the same manner that the plain pronoun’s dependency is resolved. According to O’Grady, the resolution of referential dependency of pronouns is not within the level of the sentence, but it is passed to another pragmatic system which is outside the domain of syntax. This representation is illustrated in (2-12) where the arrow  $\rightarrow$  means that the resolution is passed into a pragmatic system: