

OPTIONAL SUBJECT-VERB AGREEMENT IN PERSIAN

By

AAZAMOSADAT FEIZMOHAMMADPOUR

A DISSERTATION PRESENTED TO THE GRADUATE SCHOOL
OF THE UNIVERSITY OF FLORIDA IN PARTIAL FULFILLMENT
OF THE REQUIREMENTS FOR THE DEGREE OF
DOCTOR OF PHILOSOPHY

UNIVERSITY OF FLORIDA

2013

© 2013 Aazamosadat Feizmohammadpour

To: Iran and Persian language

ACKNOWLEDGMENTS

I would like to thank the committee members, Lori Altman, Edith Kaan, Brent Henderson for all of their interest, guidance, and insightful comments throughout the process of this research. My special thanks go to my advisor, Wind Cowles, whose support, patience, guidance and advice over the years have been invaluable to me.

I would also like to thank Arnout Koornneef for his kind assistance and expertise at many stages of the data analysis. Still more thanks to: my Persian linguistics professors whose scientific works enlightened my path during this dissertation and inspired me to study Linguistics and do research, the professors and staff of the Linguistics Department at the University of Florida for all their kind assistance and support, Tiffany Judy and Sara Court for their great support and assistance in proof reading chapters of the dissertation, Iranian community at Gainesville who voluntarily participated in the experiments of this dissertation, and Sabrina Majlesara for her continuous encouragement and positive energy.

My sincere thanks go to my parents for all their hard efforts to support me throughout my life and education, without them I could not be here.

Finally, I would also like to thank my husband, Heshmat Sarouei for his patience, encouragement and help during the years of my study. His exceptional supportive assistance in taking care of our baby Niki during the final stages of dissertation enabled me to write the final chapters and get prepared for the defense, without his help I could not have finished this work.

TABLE OF CONTENTS

	<u>page</u>
ACKNOWLEDGMENTS.....	4
LIST OF TABLES.....	9
LIST OF FIGURES.....	12
LIST OF ABBREVIATIONS.....	13
ABSTRACT.....	14
CHAPTER	
1 INTRODUCTION.....	16
Overview.....	16
Some Characteristics of Persian.....	18
Singular/ Plural Nouns.....	19
Simple and Compound Verbs in Persian.....	22
Combination.....	24
Incorporation.....	26
Passive and Inchoative in Persian.....	30
Passive.....	30
Inchoative.....	31
Subject-Verb Agreement in Persian.....	32
Probable Factors Influencing Agreement in Persian.....	36
The Goal and Outline of the Dissertation.....	41
The Importance of the Study.....	43
2 REVIEW OF RELATED LITERATURE.....	47
Overview.....	47
Psycholinguistic Accounts of Subject-Verb Agreement Processing.....	48
Evidence for Minimalism.....	50
Evidence for Maximalism.....	53
Current Psycholinguistic Accounts and Theories.....	56
Psycholinguistic Approaches and Agreement in Persian.....	60
Syntactic Factors Influencing Subject-Verb Production and Processing.....	62
Attraction Effects.....	62
Only Syntactic Factors.....	64
Hierarchical Structure.....	68
Non-Syntactic Factors influencing Subject-verb Production and Processing.....	70
Distributivity.....	70
Concreteness/ Imageability of Distributive Nouns.....	73

Collectivity	76
Gender Agreement (Conceptual Information).....	77
Morphology.....	78
Plausibility	79
Comprehension of Agreement.....	80
3 EXPERIMENT 1- JUDGMENT TASK	87
Overview.....	87
Goals	88
Acceptability Goals.....	88
Role Interpretation Goals.....	89
Method.....	90
Participants.....	90
Materials.....	90
Past and present tense in Persian	91
Verb types.....	95
Group A - Unaccusative verbs	95
Group B - Entity-specific inchoative verbs	97
Group C - Verbs of emission.....	98
Group D - Verbs of instrument	98
Group E - Verbs of agency.....	100
Group F - Passive verbs	101
Group G - Stative auxiliary “to be”.....	101
Group H - Inchoative auxiliary “to become”	102
Procedure.....	104
Design and Data Analysis	105
Acceptability.....	105
Role interpretation.....	106
Questions of the Experiment	107
Acceptability.....	107
Role interpretation.....	107
Predictions.....	108
Acceptability.....	108
Role interpretation.....	108
Results	109
Result of acceptability.....	109
Result of role interpretation.....	112
Discussion	115
Conclusion	118
4 EXPERIMENT 2- EFFECT OF VERB TYPE AND TENSE	135
Overview.....	135
Method.....	136
Participants.....	136
Materials.....	136

	Procedure.....	138
	Design and Data Analysis	139
	Predictions.....	140
	Results	140
	Discussion	142
	Conclusion	144
5	EXPERIMENT 3- EFFECT OF UNITY OF SUBJECT NOUN	153
	Overview.....	153
	Method.....	155
	Participants.....	155
	Materials.....	156
	Procedure.....	159
	Design and Data Analysis	160
	Results	161
	Discussion	163
	Conclusion	165
6	EXPERIMENT 4- EFFECT OF SUBJECT NOUN CONCRETENESS.....	174
	Overview.....	174
	Method.....	175
	Participants.....	175
	Materials.....	175
	Procedure.....	177
	Design and Data Analysis	178
	Results	179
	Discussion	180
	Conclusion	181
7	EXPERIMENT 5- OBJECT ATTRACTION EFFECT.....	190
	Overview.....	190
	Methods	193
	Participants.....	193
	Materials.....	194
	Procedure.....	199
	Design and Data Analysis	200
	Results	201
	Discussion	203
	Conclusion	206
8	CONCLUSION AND DISCUSSION	215
	Overview.....	215
	Experiment 1.....	217
	Experiment 2.....	220

Experiment 3.....	224
Experiment 4.....	226
Experiment 5.....	227
Suggestions for Further Study	233

APPENDIX

A GLOSS- JUDGMENT TASK.....	235
B GLOSS- VERB TYPE VERB TENSE EXPERIMENT	312
C GLOSS- UNITY EXPERIMENT	346
D GLOSS- CONCRETENESS EXPERIMENT	367
E GLOSS- ATTRACTION EXPERIMENT	375
LIST OF REFERENCES	423
BIOGRAPHICAL SKETCH.....	431

LIST OF TABLES

<u>Table</u>	<u>page</u>
3-1 Acceptability, test of within subject effects (per participants).....	120
3-2 Acceptability, test of within subject effects (per items).....	121
3-3 Mean proportion of unacceptability of each Verb Type.....	122
3-4 Pairwise comparison of the mean proportion of unacceptability of mismatched verb for each Verb Type.....	123
3-5 Role interpretation, test of within subject effects (per participant).....	125
3-6 Role interpretation, test of within subject effects (per items)	126
3-7 Mean proportion of patient role interpretation for different Verb Type	127
3-8 Pairwise comparison of the mean proportion of acted-on interpretation of the subject nouns for each Verb Type.....	128
3-9 Mean proportion of patient role interpretation for different Verb Tense	130
3-10 Pairwise comparison of patient interpretation for different Verb Tense	131
3-11 Mean proportion of patient interpretation for different verb number.....	132
3-12 Pairwise comparison of patient interpretation for different verb number.....	133
3-13 Patient interpretation for subjects (interaction of verb tense and verb number)	134
4-1 Sample preamble of verb type verb tense experiment & possible response	146
4-2 Test of within subject effect (per participants).....	148
4-3 Test of within subject effect (per items)	149
4-4 Mean proportion of SG verbs produced in present and past sentences.....	150
4-5 Mean proportion of SG verbs produced in different verb groups	151
4-6 Effect of interaction of Verb Type and Verb Tense in the production of mismatched verbs	152
5-1 Conditions of subject phrases.....	167
5-2 Sample preamble and possible target response for each condition	168

5-3	Test of within subject effect per participants	169
5-4	Test of within subject effect (per items)	170
5-5	Mean proportion of mismatched verb usage with different modifying prepositional phrase	171
5-6	Pairwise comparisons of proportion of mismatched verb usage with different modifying prepositional phrase	172
5-7	Mean proportion of singular verb usage (interaction of prepositional phrase and structure).....	173
6-1	Sample of preamble and possible response for concreteness experiment.....	182
6-2	Test of within subject effect (per participants).....	183
6-3	Test of within subject effect (per items)	184
6-4	Mean proportion of mismatched verb with concrete and abstract subject	185
6-5	Pairwise comparison of concrete vs. abstract subject	186
6-6	Mean proportion of singular verb produced in different structure.....	187
6-7	Pairwise comparison of inchoative and passive structures.....	188
6-8	Mean proportion of singular verb usage (interaction of concreteness and structure)	189
7-1	Sample preamble and possible response for each condition	208
7-2	Test of within subject effect per participants (conditions: APH, ASO, IPH, ISO)	209
7-3	Test of within subject effect per items (conditions: APH, ASO, IPH, ISO)	210
7-4	Test of within subject effect per participants (conditions: APN, ASO, IPH, ISO)	211
7-5	Test of within subject effect per items (conditions: APN, ASO, IPH, ISO)	212
7-6	Mean proportion of singular verb usage with different verb groups	213
7-7	Pairwise comparison of plural morphemes /-ha/ and /-an/.....	214
A-1	List of the stimuli for Judgment experiment (condition: Past Singular)	235
A-2	List of the stimuli for judgment experiment (Condition: Past Plural).....	249

A-3	List of the stimuli for judgment experiment (Condition: Present Singular)	264
A-4	List of the stimuli for judgment experiment (Condition: Present Plural)	278
A-5	List of the filler stimuli for judgment experiment (Condition: past).....	292
A-6	List of the filler stimuli for judgment experiment (Condition: present)	302
B-1	List of the target stimuli for Verb Type Verb Tense experiment.....	313
B-2	List of the filler items for Verb Type Verb Tense experiment	332
C-1	List of the stimuli for Unity experiment.....	347
C-2	List of the filler items for Unity & Concreteness experiment	359
D-1	List of the stimuli for Concreteness experiment.....	367
E-1	List of the stimuli for Attraction experiment.....	376
E-2	List of the filler items for Attraction experiment.....	416

LIST OF FIGURES

<u>Figure</u>	<u>page</u>
2-1 Hierarchical encapsulated model by Bock and Levelt (1994)	84
2-2 Two accounts of the relationship between numerosity	85
2-3 Marking and Morphing model of agreement for verb agreement and attraction .	86

LIST OF ABBREVIATIONS

3SG	THIRD PERSON SINGUALR
3PL	THIRD PERSOAN PLULAR
ACC	ACCUSATIVE
ANI	ANIMATE
INANI	INANIMATE
INCH	INCHOATIVE
IND	INDIVIDUALIEZED
N	NOUN
NO	NUMBER
NP	NOUN PHRASE
OM	OBJECT MARKER
PASS	PASSIVE
PRES	PRESENT
PL	PLURAL
PP	PAST PARTICIPLE
SG	SINGUALR
STRUC	STRUCTURE
VT	VERB TYPE
IP	INDIVIDUALIZED PLURAL
UP	UNIFIED PLULAR
US	UNIFIED SINGULAR

Abstract of Dissertation Presented to the Graduate School
of the University of Florida in Partial Fulfillment of the
Requirements for the Degree of Doctor of Philosophy

OPTIONAL SUBJECT-VERB AGREEMENT IN PERSIAN

By

Azamosadat Feizmohammadpour

August 2013

Chair: Heidi Wind Cowles

Major: Linguistics

Persian exhibits subject-verb number agreement but agreement is optional if the subject of the sentence is an inanimate plural noun. The goal of this dissertation was to examine the effect of grammatical and conceptual factors on the production of optional number agreement in Persian.

Some additional features of Persian make it an especially interesting language to study agreement phenomena in. First, while most work on agreement has dealt with ungrammatical sentences, Persian allows the grammatical use of either number matched or mismatched verbs for inanimate plural noun subjects. Second, SOV word order of its sentences creates the opportunity to test the attraction effect of an intermediary object. Third, Persian has two bound plural morphemes, /-ha/ and /-an/, suitable to test the effect of morphology. Finally, using the compound verbs in Persian provides this opportunity to restrict the participants to complete the preambles with the desired verb (verbal constituent), keeping the effect of verb type constant.

A judgment task tested the participants' acceptance of sentences in Experiment 1 with matched and mismatched verbs and their interpretation of the thematic role of the subject nouns. The results showed a greater tendency to accept mismatched verbs in

sentences with “patient” and “patient-like” subjects. Experiment 2 tested the effect of verb type and verb tense. The results were consistent with Experiment 1; participants produced more mismatched verbs with “patient” and “patient-like” subjects. Experiment 3 tested the effect of unity vs. individuality conceptualization of subject noun. The result showed more mismatched verbs produced with subjects conceptualized as a unit rather than as individuals. Experiment 4 tested the effect of concreteness of subject noun and the result showed more mismatched verbs produced with abstract nouns rather than concrete nouns. Finally, Experiment 5 showed the attraction effect of intermediary object nouns. The results showed an effect of number and morphology features of object nouns in SOV sentences.

The results of all the experiments show the effect of conceptual information in the subject-verb agreement. These results demonstrate the importance of non-syntactic factors in subject-verb number agreement in Persian.

CHAPTER 1 INTRODUCTION

Overview

A majority of world's languages exhibit *agreement* of one kind or another, in which the features of one word influence the form of another, syntactically related word. For example, English has subject-verb number agreement: Main verbs in sentences change form depending on the plurality of the subject (although it is not overtly marked in all cases, e.g. future tense). This can be seen in the cases of “to be” and “run” in present tense, as shown below in (1.1 and 1.2).

(1.1) The boy is a student. // The boys are students.

(1.2) The boy runs. // The boys run.

In English, as in most languages with subject-verb agreement, when agreement is overtly marked, it is obligatory. For example, “**The boy are a student.*” is not grammatical in standard dialects of English.

While number agreement may seem to be somewhat esoteric, it has been of great interest to linguists and especially psycholinguists because agreement phenomena are quite common and can provide important evidence about how language is structured and how that structure is treated during language production and processing. Over the past 15 years, two major approaches to agreement processing have emerged, which may be characterized as the Minimalist Approach, in which agreement is governed solely by syntactic information, and the Maximalist Approach, in which both conceptual and syntactic information influence agreement during grammatical encoding. There is empirical evidence for both approaches, however, the

data have always come from languages in which subject-verb agreement is required, and so theories have necessarily relied on data from structures that are ungrammatical.

In this dissertation, I am going to study these phenomena in Persian. The focus of my dissertation research is on the morphological agreement between subject nouns and verbs. Persian, too, has subject-verb number agreement. However, in Persian there is an interesting twist: When a plural subject is inanimate, number agreement is *optional*: the verb can take singular or plural form. Both of these forms are grammatical and acceptable both in spoken and written language. This is illustrated in (1.3) below.

- (1.3) barg-ha: mi-riz-e (cf. barg-ha: mi-riz-æn)
 leaf-PL IND-fall-3SG (cf. leaf-PL IND-fall-3PL)
 ‘the leaves falls (cf. the leaves fall)’

Optional subject-verb number agreement in Persian in which grammatical “matched” (plural) and “mismatched” (singular) verbs may be with inanimate plural subject nouns allows us to study agreement using grammatically acceptable materials without requiring speakers to respond to or produce ungrammatical language. In addition, Persian has a number of other features that make it an especially interesting language to study agreement phenomena in. First, it has canonical Subject-Object-Verb (SOV) word order which creates the opportunity to test the attraction effect on subject-verb agreement when there is an intervening object noun. Second, Persian has two bound plural nominal morphemes, /-ha/ and /-an/, which creates an opportunity to test the effect of morphology. Finally, Persian has compound verbs, which allows us to provide constraining experimental contexts for sentence production. These features, along with other important aspects of Persian will be discussed later in this chapter.

The outline of this dissertation as follows. This chapter, Chapter 1, introduces the main questions and issues of this dissertation, and starts by providing the necessary background on Persian. It concludes with a summary of the main questions that this dissertation seeks to answer. Chapter 2 provides a review of the literature relevant to the processing of subject-verb agreement. Chapters 3-7 discuss the five experiments that I conducted to test the effects of different factors in optional agreement in Persian. Finally, Chapter 8 provides a summary and discussion of the results as a whole, and ends with some concluding remarks.

Some Characteristics of Persian

In this section, I will provide information on the aspects of Persian that are most relevant for this dissertation. This section is not intended as a definitive grammar of Persian, but serves to lay the foundation for the research questions outlined at the end of this chapter.

Persian (also known as New Persian or Farsi) is an Indo-European language that is the official language of Iran, with dialects also spoken in Afghanistan, Tajikistan, and Uzbekistan. The history of this language begins with Proto-Iranian (1500 BC) and extends into Modern Persian, which is itself divided into three stages: early (800 AD-900 AD), classical (900 AD to 1800 AD), and contemporary Persian (1800 AD to present). Persian uses Arabic script, with a few additional characters to accommodate Persian sounds (/p/, /zh/, /ch/, /g/) not present in Arabic.

The unmarked word order of Persian is Subject-Object-Verb (SOV), however Persian allows scrambling in which many different word orders are permitted and used. It is a pro-drop language (the subject can be deleted) and the verb ending agrees with the subject of the sentence. There are no overt case-markers in Persian but the

postposition /ra/, /ro/, or /o/ is the definite object marker. Gender is not morphologically reflected in this language: verbs, nouns, adjectives, and even pronouns are free from gender.

Singular/ Plural Nouns

Like English, nouns in Persian can be either singular (SG; referring to one entity) or plural (PL; referring to more than one entity). The singular noun is the unmarked form as it does not have any overt morphological marker. Plurality is shown either by the number before the singular noun or by one of the plural markers suffixed to the noun.

(1.4)	gol	yek	gol
	flower	one	flower
	'flower'		'one flower'
	do	gol	gol-ha
	two	flower	flower-PL
	'two flowers'		'flowers'

As can be seen in (1.4), if the number is explicitly given, then no plural morpheme is required (e.g. *do gol*). For bare nouns, or nouns that do not have a numeric quantifier, a plural suffix must be added to the noun. The identity of this suffix is contingent on the animacy of the noun. The suffix /-an/ is restricted to use with animate nouns and a small set of living inanimate things (e.g. humans, some animals, trees and plants) and any adjectives that are used as nouns. This plural marker, shown in (1.5), is mostly used in formal and written language. Normally, it is not used for borrowed words.

(1.5)	deræxt- an	xub-an	doxtær-an
	tree-PL	good-PL	girl-PL
	'trees'	'the good (people)'	'girls'
	zæxmi-yan	geda -yan	pærænde-gan
	injured-PL	poor-PL	bird-PL
	'the injured (people)'	'the poor (people)'	'birds'
	shir-an	*medad-an	*divar-an
	lion-PL	pencil-PL	wall-PL
	'lions'	'pencils'	'walls'
	*miz-an	*rud-an	*xane-gan
	desk-PL	river-PL	house-PL
	'desks'	'rivers'	'houses'

An alternative to /-an/ is the suffix /-ha/. This suffix (whose surface form is sometimes /-a/) is the unmarked plural marker that is used for all animate and inanimate, Persian or borrowed nouns and adjectives used as nouns. It is used in both written and spoken modalities. (1.6) provides some examples:

(1.6)	deræxt- ha	xub-ha	doxtær-ha
	tree-PL	good-PL	girl-PL
	'trees'	'the good (ones)'	'girls'

zæxmi-ha	geda -ha	pærænde-ha
injured-PL	poor-PL	bird-PL
'the injured (people)'	'the poor (people)'	'birds'
shir-ha	medad-ha	divar-ha
lion-PL	pencil-PL	wall-PL
'lions'	'pencils'	'walls'
miz-ha	rud-ha	xane-ha
desk-PL	river-PL	house-PL
'desks'	'rivers'	'houses'

While all borrowed nouns are pluralized by the suffix /-ha/, some borrowed Arabic nouns are used in their broken plural forms. These borrowed Arabic nouns are mostly used in formal and written language.

(1.7)	æfkar	fekr-ha	æsh'ar	she'r-ha
	thought.PL	thought-PL	poem.PL	poem-PL
	'thoughts'	'thoughts'	'poems'	'poems'
	fæks-ha	kopi-ha	tank-ha	bomb-ha
	fax-PL	copy-PL	tank-PL	bomb-PL
	'faxes'	'copies'	'tanks'	'bombs'

These facts about pluralization in Persian are important because all of the materials in the experiments presented in this dissertation use inanimate plural nouns.

Further, in Chapter 7, I will present the results of an experiment that explicitly tested the impact of these different morphological markers of plurality on agreement phenomena in Persian.

Simple and Compound Verbs in Persian

Turning now to verbs in Persian, Dabir-Moghaddam (1997) classifies Persian verbs into two categories: simple and compound. Simple verbs consist of a verbal constituent while compound verbs consist of a non-verbal constituent (a noun, adjective, past participle, prepositional phrase, or adverb) plus a verbal constituent. The verbal and non-verbal constituents of the compound verbs are independent. Both compound and simple verbs are commonly used in modern Persian. But, in many cases, simple verbs are used more often in formal and written language .

(1.8)	<u>Compound verbs</u>	<u>Simple verbs</u>
	<i>xonæk kærdæn</i>	<i>nushidæn</i>
	<i>cold to do</i>	<i>to drink</i>
	<i>'to cool'</i>	<i>'to drink'</i>
	 <i>gush kærdæn</i>	 <i>shenidæn</i>
	<i>ear to do</i>	<i>to hear</i>
	<i>'to listen'</i>	<i>'to hear'</i>
	 <i>neshan dadæn</i>	 <i>pæridæn</i>
	<i>show to give</i>	<i>to jump</i>
	<i>'to show'</i>	<i>'to jump'</i>

Unlike pluralization in nouns, which is largely agreed on, there is some controversy about how to characterize complex and simple verbs in Persian. Dabir-Moghaddam does not agree with Mohammad & Karimi (1992: 201), who believe that the verbal element of complex verbs are best characterized as light verbs and as such are semantically empty, require the nominal element to provide semantic content and do not bear a thematic relation to the nominal element. In this research, I will use Dabir-Moghaddam (1997)'s classification of compound verbs, because his approach clearly explains the difference between examples such as /kotæk zædæn/, 'to beat' vs. /kotæk xordæn/, 'to be beaten'. According to him, the verbal element expresses the mode of activity and the non-verbal element expresses activity itself. Looking at these two compound verbs, we can see that the nonverbal parts are the same and the verbal parts are different. So, the difference of meaning and the thematic role the verbs assign to their subject is in the verbal part. As it is explained below with examples (1.21- 1.23), the verbal part /zædæn/ assigns the "agent" (doer) thematic role to its subject while the verbal part /xordæn/ assigns the "patient" (acted on) role to the subject noun. Further, Dabir-Moghaddam's arguments account for subtle differences of interpretation in compound verbs, such as in the case of /næfæs zædæn/, 'to breathe' (seen in (1.20a)), vs. /næfæs keshidæn/, 'to breathe' (seen in (1.20b)). While both maybe translated as 'to breathe', the first carries an interpretation that highlights the "disconnectedness and instantaneity of the action" while the second highlights the "prolongation and duration of the action". The existence of these types of combined compounds with the same non-verbal noun but alternative forms of verbal part supports the Dabir-Moghaddam's argument in favor of the lexicalization of verbs involved as "aktionart-markers".

Dabir-Moghaddam classifies the Persian compound verbs as either: (1) Combination or (2) Incorporation. In the target items of the five experiments presented here, I have used combined compound verbs. Using combined compound verbs (and not simple verbs) of Persian in the completion tasks (explained in the method section of each experiment) gave me the best opportunity to provide the participants with the preambles including the non-verbal part of the compound verbs requesting them to complete the sentence with the verbal part which includes the tense, aktionart, and verb-ending (which is the suffix marker of subject-verb agreement).

Combination

In combination-type verbs, the non-verbal constituent (a noun, adjective, past participle, prepositional phrase, or adverb) combines with a verbal constituent. The meaning of the combined compound verbs (except for adjective + auxiliary combined compounds) is not transparent and in some cases is actually metaphoric. Combined compound verbs are not highly productive (except for adjective + auxiliary combined compounds) . Below are examples of each type:

Adjective + auxiliary. In this open set, an adjective is combined with the stative auxiliary /budæn/, ‘to be’, the inchoative auxiliary /shodæn/, ‘to become’, or the causative auxiliary /kærdæn/, ‘to make’. The meaning of the combined compound is transparent and it is very productive.

(1.9) *hæva* *aftabi* *bud*
 weather *sunny* *be.PAST.3SG*

Lit., ‘the weather was sunny

‘it was sunny’

(1.10) *ab* *gærm* *shod*
 water *warm* *become.PAST.3SG*
 ‘the water became warm’

(1.11) (*anha*) *kiyan* *o* *xæbærdar* *kærd-æn*
 (*they*) *Kiyan OM* *informed* *make.PAST.3PL*
 Lit., ‘they made Kiyan informed.’
 ‘(they) informed Kiyan.’

Noun + verb. This is not an open set. For noun-plus-verb type verbs, a noun is combined with different simple verbs (e.g. */kærdæn/*, ‘to do’, */dadæn/*, ‘to give’, */gereftæn/*, ‘to take’, etc.).

(1.12) *se* *sa’æt* *kar* *kærd-æm*
 three *hour* *work* *do.PAST.1SG*
 ‘I worked for three hours’

(1.13) *Ba* *u* *dæst* *dad-æm*
 With *3.SG* *hand* *give.PAST.1SG*
 ‘I shock hands with him/her’

(1.14) *Dærs-ha* *ro* *yad* *gereft*
 Lesson-Pl *OM* *learning* *take.PAST.3SG*
 ‘he/she learned the lessons’

Prepositional phrase + verb. In this type of verb, prepositional phrase is combined with a verb. This, too, is a closed set.

- (1.15) be yad *aværd-im*
 to remembrance *bring-PAST.1PL*
 ‘we remembered’

Adverb + verb. In this case an adverb is combined with a verb. It is a closed set.

- (1.16) xæmir-ha vær amæd
 dough-PI up come.PAST.3SG
 ‘the dough rose’

Past participle + passive auxiliary: In this case a past participle of a transitive verb is combined with the auxiliary verb /shodæn/, ‘to become’. This produces a passive verb, and is productive in Persian; it is an open set.

- (1.17) *bæste-ha* *ferestade* *shod-æn*
 parcel-PI *sent* *become.PAST-3PL*
 ‘the parcels were sent’

Incorporation

In incorporation, either the direct object or some prepositional phrase incorporates with the verb and creates a compound verb. Through the incorporation, the direct object loses its grammatical ending(s). Also, the prepositional phrases which function as adverbs of location lose their preposition. Then the object or the noun of the prepositional phrase incorporate with the verb. (Dabir-Moghaddam 1997: 26)

Incorporation of direct object. through this process the direct object loses its grammatical endings (such as the postposition –ra, the indefinite marker /-i/, the plural suffix, the possessive pronominal suffix) and becomes like a [-specific, -definite object]

and incorporates with the verb. The created verb is an intransitive compound which is “conceptual whole”. (Dabir-Moghaddam 1997: 41). The meaning of incorporation compound verbs is transparent.

(1.18) a. Niki zærf-ha ro shost
 Niki dish-PI OM wash.PAST.3SG
 ‘Niki washed the dishes’

b. Niki zærf shost
 Niki dish wash.PAST.3SG
 ‘Niki did dish-washing’

Incorporation of prepositional phrase. Some prepositional phrases functioning as adverbs of locations may incorporate with the verb, losing the preposition in the process.

(1.19) a. ayene be zæmin oftad
 mirror to ground fall.PAST.3SG
 ‘the mirror fell to the ground’

b. ayene zæmin oftad
 mirror ground fall.PAST.3SG
 ‘the mirror fell down’

Dabir-Moghaddam (1997:46-47) explains the differences of combined and incorporated compound verbs. All the incorporated compounds have a non-incorporated

counterpart. They are intransitive (the incorporation reduces the valency of the verb). They are very productive, and lexically and semantically transparent.

The combined compounds do not have “noncombined counterpart”. They are transitive or intransitive, as the combination process does not change the valency of the verb. They are neither as productive as incorporated compounds nor are they transparent (usually involving metaphoric extension). In the noun-verb combined compounds, the verbal part has been lexicalized and act as an “aktionart (‘type of action’, mode d’action’) marker, a sort of aspectual character”. Using the following example, Dabir-Moghaddam (1997: 46-47) argues that the existence of some combined compounds with the same non-verbal noun but alternative forms of verbal part supports the argument that the verbs are working as “aktionart-markers”. Because the verbs show the manner of the realization of the event in the way that the speakers perceive and conceptualize them.

(1.20) a. næfæs zædæn
 breath to strike
 ‘to breathe’

 b. næfæs keshidæn
 Breath to pull
 ‘to breathe’

Dabir-Moghaddam explains the verbal part /zædæn/, ‘to strike’ shows the “disconnectedness and instantaneity of the action” while the verbal part /keshidæn/, ‘to pull’ conveys the “prolongation and duration of the action”.

Providing examples such as /kotæk zædæn/, ‘to beat’ vs. /kotæk xordæn/, ‘to be beaten’, he argues that the verbal part of the compounds express “the mode of the activity” but the nonverbal part conveys the activity itself. Providing several pair or triple compounds of this sort, he rejects Mohammad and Karimi (1992)’s idea calling the verbal part of the compound a “light verb”. Dabir-Moghaddam believes that in these compound verbs the simple verb acts as an aktionart-marker, as it has been lexicalized. Hence, the verbal part conveys the “real or metaphoric” viewpoint. For example the compounds with the verbal element /kærdæn/, ‘to do’ has “the DO-ing viewpoint”, /zædæn/, ‘to strike’ has “the STRIKE-ing viewpoint”, and /dashtæn/, “to have’ has “the HAVE-ing viewpoint”, etc.

Based on his explanation, it is easy to explain that the compound with the verbal element /xordæn/, ‘to eat’ has the RECEIVE-ING viewpoint (the subject of the sentence receives the action, so it is almost always acted-on and the thematic role is patient). Below are some examples (from Dabir-Moghaddam 1997: 46):

(1.21)	gul	xordæn	gul	zædæn
	deceive	to eat	deceive	to strike
	‘to be deceived’		‘to deceive’	
(1.22)	sili	xordæn	sili	zædæn
	slap	to eat	slap	to strike
	“to be slapped”		“to slap”	

(1.23)	ta	xordæn	ta	zædæn
	fold	to eat	fold	to strike
	“to become folded”		“to fold”	

Dabir-Moghaddam (1997:47) explains that in line with Binnick (1991:148,170), he has distinguished between ‘aspect’ and ‘aktionsart’. He has considered ‘aspect’ as “grammatical(ization)” and ‘aktionsart’ as “lexical(ization)”. According to Dabir-Moghaddam, aspect includes notions such as “perfective”, “imperfective”, and “habitual” while aktionarts include concepts such as “instantaneous”, “durational”, and “the various viewpoints”.

Passive and Inchoative in Persian

Passive and inchoative are structures that I used in the materials for Experiments 1-4. Persian grammarians and linguists have had different ideas about passive structure in Persian. This could be due to the similarities of these two structures: passive and inchoative structures both have the same auxiliary, /shodæn/, ‘to become’. The other reason for this confusion is the omission of “by phrase” in passive sentences. In this research I have followed Dabir-Moghaddam (1982)’s analysis to distinguish Passive and Inchoative verbs.

Passive

A Persian passive sentence consists of a subject noun, past participle, and the auxiliary /shodæn/, ‘to become’. It means that the action has been taken place intentionally by an agent. Most of the time, the “by phrase” is omitted in passive sentences.

(1.24) cheraq-ha (tævæsote bæche-ha) shekæste shod-æn
 light-PL (by child-PL) seen became.3PL
 ‘The lights were broken (by children)’

Inchoative

The inchoative structure consists of a subject noun, an adjective, and the auxiliary /shodæn/, ‘to become’. The inchoative structure conveys a change of state by itself (i.e. the inchoative reading) without the interference of an agent.

(1.25) hæva særd shod
 weather cold became.3SG
 Lit., ‘the weather became cold’
 ‘it became/ got cold.’

With the following examples, Dabir-Moghaddam (1982:79) explains about a group of sentences with inchoative structure (subject + adjective + the auxiliary /shodæn/, ‘to become’) which are potentially ambiguous between inchoative reading and passive reading. The sentence (a) is an active sentence in which the subject is the agent of the verb. Sentence (b) is an inchoative sentence because the action happens by its own and there is no agent. Sentence (c) has inchoative structure but the phrase (by neighbors) indicates that the action has been taken deliberately. The sentences (b) and (c) are the same if the optional parts are deleted. So, after “by deletion”, in these two sentences, the sentence (d) will be produced whose structure is similar to inchoative (adjective + the auxiliary), but the action could be deliberately or on its own accord. Dabir-Moghaddam suggests this construction to be called “ambiguous/opaque passives”.

- (1.26) a. hæmsaye-ha mashin ra pænchær kærd-æn
neighbor-PL car OM flat made-3PL
Lit. ‘the neighbors made the car’s tire flat.’
- b. mashin (xod be xod) pænchær shod
car (self with self) flat became.3SG
Lit. ‘the car’s tire became flat (gratuitously).’
- c. mashin (tævæsot-e hæmsaye-ha) pænchær shod
car (by neighbor-PL) flat became.3SG
Lit. ‘the car’s tire became flat (by the neighbors).’
- d. mashin pænchær shod
car flat became.3SG
Lit. ‘the car’s tire became flat.’

Subject-Verb Agreement in Persian

The most important feature of Persian for our present purposes is the way in which Subject-Verb agreement functions. According to Mahootian (1997), Persian is a Nominative-Accusative language. The subjects of both transitive and intransitive verbs are unmarked for case. No morphological distinction exists between agentive and non-agentive subjects. In this pro-drop language, the subject is optional and the verb endings agree with the subject of the sentence. The verb endings used in formal and informal Persian are shown below. In formal Persian, when the stem ends in {/t/ or /d/},

the verb ending for 3SG is [Ø] zero morpheme. The verb ending /-æd/ is used elsewhere.

(1.27)	Person	formal verb ending	informal verb ending
	1SG	/-æm/	/-æm/
	2SG	/-i/	/-i/
	3SG	/-æd/ (present), Ø (past)	/-e/ (present), Ø (past)
	1PL	/-im/	/-im/
	2PL	/-id/	/-in/
	3PL	/-ænd/	/-æn/

There is person and number agreement between the subject and the verb; the verb conjugates for 1, 2, and 3 persons, singular (one person/entity) or plural (more than one person/entity). There is no agreement for gender as it is not morphologically encoded in Persian (neither for nouns, adjectives not even for pronouns).

(1.28)	(mæn)	kelid	ra	be	u	mi-deh-æm
	(I)	key	OM	to	3.SG	IND-give.PRES-1SG
		'I give the key to him/her'				

(1.29)	(to)	kelid	ra	be	u	mi-deh-i
	(you)	key	OM	to	3.SG	IND-give.PRES-2SG
		'You give the key to him/her'				

- (1.30) (u) kelid ra be Niki mi-deh-æd
 (she/he) key OM to Niki IND-give.PRES-3SG
 'she give the key to Niki'
- (1.31) (ma) kelid ra be u mi-deh-im
 (we) key OM to 3.SG IND-give.PRES-1PL
 'we give the key to him/her'
- (1.32) (shoma) kelid ra be u mi-deh-id
 (you) key OM to 3.SG IND-give.PRES-2PL
 'You give the key to him/her'
- (1.33) (anha) kelid ra be u mi-deh-ænd
 (they) key OM to 3.SG IND-give.PRES-3PL
 'they give the key to him/her'

According to Mahootian (1997:135), "Plural inanimate subjects may take singular inflections on the verb." This means that if the subject of the sentence is inanimate third person plural, the subject-verb agreement for number is optional and the verb can be either third person singular or third person plural and both forms are grammatical. This optionality of subject-verb agreement is only for inanimate third person plural nouns and not for any other persons or animates. Below are some examples:

- (1.34) bæche-ha xis shod-ænd /*shod
 child-PL wet became-3PL /became.3SG
 ‘The children became wet.’
- (1.35) bæрге-ha xis shod-ænd /shod
 paper-PL wet became-3PL / became.3SG
 ‘The papers became wet.’
- (1.36) kargær-an kar mi-kon-ænd /*mi-kon-ænd
 worker-PL work IND-do-3PL /IND-do-3SG
 ‘The workers are working.’
- (1.37) cheraq- ha mi-deræxsh-ænd /mi-deræxsh-ænd.
 lamp-PL IND-shine-3PL /IND-shine-3SG
 ‘The lamps shine’
- (1.38) bazigær-an hæme ra mi-tærsan-ænd /*mi-tærsan-ænd
 Actor-PL all OM IND-frighten-3PL /IND-frighten-3SG
 ‘actors frighten all the people’
- (1.39) fekr-ha-yæsh hæme ra mi-tærsan-ænd /mi-tærsan-ænd
 thought -PL-his all OM IND-frighten-3PL /IND-frighten-3SG
 ‘his thoughts frighten all.’

Mahootian (1997: 253)'s description of agreement in Persian is consistent with the above description:

'Subject must be coded on the verb via the personal endings, which agree with the subject in person and number. The subject must be coded on the verb even if the subject NP is pro-dropped. An important exception to subject-verb agreement is with inanimate plural subjects, which can take a singular verb.'

Providing the following example, Mahootian (1997:136) explains that the choice of plural or singular verb with the inanimate plural subject is optional:

(1.40) chæmedun-ha tu-ye mashin-e
 suitcase-PL in-EZ car-is
 'the suitcases are in the car.'

(1.41) chæmedun-ha tu-ye mashin-ænd
 suitcase-PL in-EZ car-are
 'the suitcases are in the car.'

Probable Factors Influencing Agreement in Persian

As one might imagine, there has been some interest within Persian linguists regarding the features that influence or determine optional agreement. For example, Sedighi (2005:3) argues that animacy in Persian has morphological exponents and forces a restriction on subject –verb agreement. In the following examples, she shows that animacy is morphologically realized because the selection of plural marker depends on the animacy of the subject. The plural suffix /-an/ is used only for animate plural nouns while the suffix /-ha/ is used both for animate and inanimate plural nouns.

(1.42) mæn doxtær-an ra did-æm
 I girl-PL OM see.PAST-1SG
 'I saw the girls'

(1.43) mæn ketab-ha ra did-æm
 I book-PL OM see.PAST-1SG
 'I saw the books'

Sedighi (2005) writes that Thackton (1978), Meshkat al-dini (1987), and Saadat (1996) have pointed out the optionality of the agreement but no syntactic or morphological explanation has been provided in this regard. Saadat (1996) assumes that the reason for the constraint is initiated from classical Persian in which the inanimate subjects were not considered as the real agents as they did not have control over their actions. Saadat (1996) provides a series of examples from literature texts showing that the verbs of the inanimate nouns in classic texts were only singular. He believes that the reason for the mismatched form of the verb is that the inanimates were considered as a unit and not individuals. But for a few exceptional examples from literature texts in which the inanimate plural nouns have plural verbs, he explains that the inanimate nouns can have plural verbs in case they are used metaphorically and personified.

Meshkat al-dini (1987) believes that the optional agreement depended on the Individuality vs. Unity of the inanimate plural subject. If the emphasis is on the Individuality of the entities of the subject, the verb is plural but if the emphasis is on the Unity of the entities of the subject, the verb is singular. Similarly, Windfuhr (1979) states

that implicitly or explicitly human subjects will show agreement with a verb, while, the subject-verb agreement for non-human subjects indicates the emphasis on the number of individual items.

Sedighi (2005) proposed an account using a Distributed Morphology framework to explain the optional inanimate plural subject-verb agreement in Persian. Based on Distributed Morphology, syntax is the place where the subject-verb agreement occurs. Sedighi (2005, 2007) argues that it is after syntax and before vocabulary insertion that the impoverishment rule deletes the number feature and causes the emergence of a less marked feature which is singular form. In this account, inanimate subjects create a constraint on the subject-verb agreement so that the verbs can be less marked (singular) or plural. She proposes an optional impoverishment rule by which the number feature is deleted when the subject has [- animate] feature. Sedighi asserts that the factors of this optional impoverishment or situations in which it is applied are not clear yet.

In yet another account, Lotfi (2006) argues that the use of singular verb for inanimate plural subject indicates a collective conceptualization of the plural inanimate subject i.e. the entities of the subject are considered as a single unit. While the use of plural verb indicates a distributive conceptualization, i.e. entities of the subject are considered individuated. Collective and distributive conceptualizations do not mean that they are necessarily collective and distributive nouns. The Persian collective nouns such as /*gælle*/ 'herd', /*shora*/ 'council', and /*tim*/ 'team' are apparently singular but are inherently collective in the lexicon. Lotfi explains that the collective and distributive conceptualizations are morphologically plural and context sensitive; in some contexts

they have plural verbs while in others the verbs are singular. Distinguishing between ‘essence’ and ‘action’, he argues that multiple entities (inanimate plural) nouns get singular verbs if they are collectivized in action but they get plural verb if they are individuated in the action.

With the following example he argues that autonomy brings about the choice between singular and plural verb endings. The singular verb is used when the entities of the subject are considered as “non-autonomous elements” involved in an event “impersonally”. While, the plural verb is used for the subject entities considered as “autonomous elements” that are individuated for the action.

(1.44) sosis-a suxt (næ lubia-ha)
 sausage-PL burt.3SG (not bean-PL
 ‘the sausages burnt (not the beans)’

(1.45) sosis-a suxt-æn
 sausage-PL burnt-3PL
 ‘the sausages burnt’

In conclusion, Lotfi (2006:136-137) states that:

the verb is the unmarked linguistic realization of an action or event [so] the proximity between the verb and the conceived autonomy of members of a group in action makes verbs natural markers of collectivity and distributiveness.

He suggests further research to investigate the effect of verb type, tense, and aspect specifications of the event on the speaker’s preference for singular and plural . He believes that Persian speakers prefer to use plural verbs when the tense of the

sentence is future and not past. It may seem more acceptable to have autonomy in actions when the course of events has not finished yet. Lotfi's suggestion has not been followed by any systematic experiment investigating the effect of the factors or by further explanation/ example in this regard.

There is some empirical evidence to support Lotfi's proposal: Sharifian & Lotfi (2007) conducted a study with three tasks. In the preference task, the participants were instructed to read a set of twenty sentences with different structure (which included inanimate plural subjects) and indicate whether the singular or plural form of the verb or both forms were appropriate. The results showed that the participants largely preferred one of the forms in the experiment either singular or plural and did not accept both forms. Based on this result, they suggested that singular and plural forms of the verb are not in free variation and there should be some significant factors for the production of SG/plural forms of the verbs.

In another task, ten scenarios with different structures were provided and the participants were requested to complete the scenarios. The results showed that different proportions of singular and plural verbs were used by the participants. The authors suggest that the use of singular verb could be due to the lack of individuation sense of the subjects in the speaker's construal. The result of picture description task showed that more plural verbs were used when the subjects showed animate features such as movement. Also, the participants used more plural verbs for the subjects such as houses, shops and balloons that were portrayed very distinct from each other.

Sharifian & Lotfi (2007) suggest that the choice of singular vs. plural is at least to some extent a function of the subject's conceptualization. If the speaker conceptualizes

the subject of the sentence as a whole (low level of construal resolution), the verb is singular. If the speaker's construal highlights the individuation of the subject, the verb will be plural. They conclude that the optional use of singular vs. plural to express the same fact is in fact using different forms capturing different construal of the experience. However, it is important to note that Sharifian & Lotfi (2007) did not specifically test the influence of any other factors in the subject-verb optional number agreement. Further, the structures of the target sentences were not controlled for and it remains unclear what other factors may be relevant for Persian.

The Goal and Outline of the Dissertation

As Sedighi (2007) has asserted and as far as I have found, no systematic study has been accomplished to test the effects of any specific factor influencing agreement patterns in Persian. Hence, the situations in which the Persian speakers/writers prefer to use singular vs. plural verbs for the inanimate, plural nouns are unknown, despite a great deal of speculation and argumentation. Thus, further investigation is needed to test the effect of different factors influencing the optional subject-verb number agreement.

My research goal was to determine the effect of grammatical and conceptual factors in the production of number agreement in Persian, and apply these results to better understand both how such agreement is represented and produced. Based on prior theoretical and experimental research in Persian and other languages, I identified the following factors as the most potentially relevant, and tested them across five experiments, presented in chapters three to seven. As a native speaker of Persian, I created and prepared all the target and distracter items of the five experiments of this dissertation (listed and glossed in Appendices A to E at the end of the dissertation).

Chapter 3: In Experiment 1, a judgment task was used to investigate (a) the acceptability of the sentences with singular and plural verbs testing the effect of verb tense (e.g. past, present) and the thematic role of the subject nouns, (b) the role interpretation of the inanimate plural subject nouns in the same target sentences testing the effect of verb tense (e.g. past, present), the thematic role of the subject nouns, and verb number (singular, plural). The materials of this experiment are the complete sentences of the preambles used in experiment 2 for completion.

Chapter 4: In Experiment 2, a completion task was used to test the effect of verb tense and the thematic role of the subject nouns (e.g. agent, patient). The goal of this experiment was to test if speakers would produce more singular verb forms with plural subjects when the verb tense was past or present and the thematic role of the subject was agent, patient, theme or instrument.

Chapter 5: Experiment 3 tested the effect of conceptualization of the entities of the subject noun as individualized vs. unified. More specifically, this experiment was to test whether the speakers would produce more mismatched verb forms with individualized vs. unified plural subjects.

Chapter 6: Experiment 4 tested the effect of concreteness vs. abstractness of the subject nouns, i.e. to test whether the speakers would produce more mismatched verb forms with concrete vs. abstract subject nouns.

Chapter 7: Experiment 5 tested the attraction effect of object nouns in the subject-object-verb word order (SOV) sentences. In this experiment the effect of object local noun, its animacy, singularity or plurality, and its different plural morphemes (the

unspecific plural morpheme /-ha:/ and the specific animate plural morpheme /-an/) in the produced form of the verb were tested.

In all experiments except Experiment 1, participants performed a verbal sentence completion task in which they read the beginnings of sentences and then completed the sentence aloud. I coded and analyzed the proportion of mismatched (singular) verbs in their responses to test the effect of the mentioned factors in the optional agreement.

The Importance of the Study

The focus of this dissertation is on the optional morphological agreement between subject nouns and verbs in Persian language. While number agreement may seem to be somewhat esoteric, it has been of great interest to linguists and psycholinguists because agreement phenomena are quite common in language and can provide an important evidence about how language is structured and how that structure is treated during language production and processing.

As we shall see in Chapter 2, there has been a great deal of research on subject-verb agreement in other languages, all of which require subject-verb agreement. To date, there has been no effort to either systematically test the claims of Persian linguists, or to apply insights from Persian to psycholinguistics theories of subject-verb agreement.

Over the past 15 years, two major approaches to agreement processing have emerged: The Minimalist approach, in which agreement is governed solely by syntactic information, and The Maximalist approach, in which both conceptual and syntactic information influence agreement during grammatical encoding. There is empirical evidence for both approaches, however, the data have always come from languages in which verb agreement is required, and so theories have necessarily relied on data from

structures that are ungrammatical. However, because it is possible to have grammatical agreement “mismatches” in Persian, this allowed me to study agreement without requiring speakers to respond to or produce ungrammatical sentences.

In fact, Persian has a number of characteristics that make it an informative case: First, subject-verb agreement studies in other languages have necessarily required using elicitation of errors and attraction effect techniques to test the effect of syntactic and non-syntactic factors in agreement. Thus, the material of the experiments were sometimes ambiguous sentences and the collected data were ungrammatically produced sentences with agreement errors. The optionality of subject-verb number agreement in Persian offers an excellent opportunity to study subject-verb number agreement using grammatical Persian sentences. There is no need to use elicitation of agreement errors in the experiments and use ungrammatical sentences and agreement errors as data because both matched (plural form) and mismatched (singular form) of the verbs are grammatical and acceptable.

Second, previous studies in agreement have used a completion task in which the participants were provided with a series of preambles and they were supposed to repeat the preamble and complete the sentence with their own words. The participants were free to complete the sentence with any verb/structure. But, using different verbs/structures could be an interfering factor in the experiments affecting agreement errors. Using compound verbs of Persian gives us a golden opportunity to avoid this factor. The non-verbal part of the compound verbs (as a part of the preambles) were given to the participants and they were requested to complete the sentence with their own verbs. In this way the participants (not knowingly) were restricted to use the verb

that was designed to complete a preamble with. So, I had this opportunity to test the effect of verb type in the agreement and keep the effect of verb type constant in all the experiments.

Third, previous studies have tested the effect of morphology in the agreement using irregular/invariant plural nouns, and sometimes because of the restrictions of languages they could not test this factor alone (they had to mix this factor with another factor, e.g., gender). Again, Persian has a property which can be very helpful to test the effect of morphology. Having two plural morphemes /-ha/ (for all nouns) and /-an/ (specifically for animate nouns) provided me with a very exceptional opportunity to test the effect of morphology in agreement.

Finally, previous studies have tested the attraction effect of a local noun interfering between subject head noun and verb. In most of the experiments, this local noun was the noun phrase of the prepositional phrase modifying the subject head noun (so the local noun was a part of the subject phrase). In some experiments, the local noun was the noun phrase of a relative clause. In a few experiments in languages like French, the local noun was an object clitic pronoun (not noun) located between the subject noun and the verb. In fact, the word order of the studied languages were SVO and thus researchers could not test the intervening attraction effect of object noun as a local noun. Persian, like any SOV language, can be useful because the word order of unmarked sentences is SOV, and so the object falls naturally between the subject and verb. This provides a way to test the attraction effect of main object nouns in the optional subject-verb agreement.

The combined pattern of results in this dissertation supports a constraint-based, Maximalist approach to number agreement, particularly by demonstrating effects of thematic role, concreteness vs. abstractness, and unity vs. individuality of the subject nouns in number agreement. In my dissertation, I will propose a model for agreement that draws on prior theoretical and experimental data from other languages in addition to my data from Persian. Because no other studies of sentence production in Persian have been published, the work presented in my dissertation provides a set of unique and important data for researchers interested in a language with grammatical number mismatches – and allows me to create a model that is more wide-reaching in scope.

CHAPTER 2 REVIEW OF RELATED LITERATURE

Overview

As discussed in Chapter 1, in many languages, the main verb in a sentence must be inflected in some way in order to “agree” with the plurality of its subject. Some examples of this in English are given in (2.1) below, in which the form of the verb *walk* changes (with the addition of -s for the singular subject *Mary*). Some verbs, like “to be” undergo more dramatic suppletion processes, as seen in (2.1c) and (2.1d).

- (2.1) a. Mary walks every day
b. Mary and John walk every day.
c. Mary is a student.
d. Mary and John are students.

A considerable amount of research has explored the mechanism of subject-verb number agreement during language processing, production and comprehension. This increasing interest in the processing of agreement is due in part to the prevalent nature of agreement cross-linguistically. According to Mallinson & Blake (1981), three fourths of languages have agreement which is overtly marked in most, if not all, of the sentences. Because agreement is a fundamental aspect of languages, understanding the mechanism of agreement is an important part of understanding speech production.

This chapter includes a summary of the studies in the production of subject-verb agreement, starting with different theories about subject-verb agreement in sentence production and evidence for them, and then going on to discuss the results more generally from experiments that have tested various factors on agreement.

Psycholinguistic Accounts of Subject-Verb Agreement Processing

Accuracy and efficiency are two essential properties of language production that theories of language production should explain. On average, speakers of different languages produce 2-3 words per second. Speakers retrieve these words from their lexicon, which has about 30,000 words. In the process of speech, speakers must not only retrieve words, but also construct syntactic relations among these words (such as number agreement between the subject and verb or gender agreement between a noun and adjective). The speaker needs to combine the information retrieved from memory to the phonological forms (words) with correct pronunciation. Although this task is very complex, the speakers use language very fast and easily. According to Bock (1991), slips of tongue occur approximately once every 1,000 words, as estimated from the London-Lund corpus (Garnham, Shillcock, Brown, Mill, & Cutler, 1981).

Vigliocco & Frank (1999 & 2001) classify theories of agreement into two classes based on the issues of accuracy and efficiency. These two classes of theories of agreement can be thought of (and are labeled by Vigliocco & Frank) as *maximalist* and *minimalist*. These approaches are considered mutually exclusive, as the assumptions of one class contradict the assumption of the other. According to Vigliocco & Hartsuiker (2002: 443), the *minimalist approach* follows the principles of modularity, and most importantly, the assumption of information encapsulation in which independently modules do not have access to facts that other systems know about (Fodor, 1983). The two main assumptions of the minimalist approach are 1) *minimal input* and 2) *unidirectionality*. Minimal input means that only the minimum necessary information flows among the levels and thus any non-necessary information from an earlier level cannot influence processing at the next level. It was for this reason that Vigliocco & Frank

(1999) labeled this approach “minimalist”. Uni-directionality means that information from a later level cannot influence processing at a prior level via feedback – the minimalist approach thus is a feed-forward model. In the minimalist approach, accuracy is attained by insulating each process at one level. This means that syntactic encoding is insulated from non-necessary information at conceptual and phonological levels that could interfere. Efficiency is also attained by the properties of modular systems. Since modules are narrowly focused, they can be fast in their functioning.

According to Vigliocco & Hartsuiker (2002: 443), quoting from (Boland & Cutler, 1996), the other class of theories (*maximalist*) “lies on the other side of the great divide”. These theories assume 1) *interactivity of information*: different types of information (syntactic and non-syntactic) interact in the process of agreement and 2) *maximal input*: the common information from other levels can be used in other levels, even the levels after them. In fact, it was for this reason that Vigliocco & Frank (1999) label this approach as “maximalist”.

This approach achieves accuracy by using the converging information available to the system. In this way, related information from different layers can be used to compensate loss of information. This related information could be of the same type (syntactic) or of different type (semantic). This view achieves efficiency through maximal input. This means that the availability of maximal input before word selection gives the opportunity for faster encoding by virtue of preactivation (e.g. *cascading of activation*). Another factor which assists efficiency is bidirectionality of information, that is, information can be used by either prior or later processes.

Evidence for Minimalism

In a series of completion tasks, Bock and Miller (1991) used elicitation of errors to examine the process of subject-verb agreement. In these experiments, the participants were given a series of subject preambles and they were asked to repeat and complete the sentence. The preamble consisted of two noun phrases (e.g., *the key(s) to the cabinet(s) ...*). One of the nouns was a subject head noun (e.g. *key* or *keys*) and the other noun was the noun of the prepositional phrase (e.g. *cabinet* or *cabinets*) which was called a “local noun” because it was locally between the subject head noun and the verb and had an interfering role in the subject-verb agreement. They found that more agreement errors were produced when the head noun and local noun mismatched for number. There were significantly more errors when the head noun was singular and the local noun was plural.

Bock & Miller (1991) also tested the effect of notional number. They prepared a set of target preambles in which the head nouns were “distributive” (grammatically singular but referring to multiple tokens, e.g., *the label on the bottles ...*) or single token nouns (grammatically singular and referring to one token, e.g., *the letter from the lawyer ...*). The result showed no effect of distributivity, with equal agreement errors found for both the distributive and single token subject head nouns.

The effect of semantic factors like animacy in subject-verb agreement was also tested by Bock & Miller (1991), and by Bock, Eberhard, and Cutting (1992). Their results showed that animacy played a role in selecting the noun phrase as a subject but did not affect error rates in subject-verb agreement. The authors thus concluded that animacy does not have any significant effect on subject-verb number agreement. Bock & Eberhard (1993) examined the effect of phonological factors on the production of

subject-verb agreement in English. Their results showed no effect of phonological factors on agreement. Bock & Miller (1991) and Bock & Eberhard (1993) concluded that syntactic feature processing is the mechanism underlying the agreement errors and the process is during a strictly grammatical stage of the production process: Agreement is only affected by the syntactic properties of the subject head and the local nouns. Semantic interpretation of the subject and morpho-phonological information do not have any effect on the subject-verb agreement.

According to Vigliocco, Butterworth, & Semeza (1995: 188), the minimalist view is consistent with many linguistic treatments of agreement (Chomsky, 1965; Akmajian & Heny, 1975; Gazdar et al., 1985). They believe that in subject-verb agreement the features of a subject (person, number, gender), as the source or controller, is copied to the verb, which is the target. This view is also consistent with the psycholinguistic models of speech production that accept copying operations (Garrett, 1980; Kempen & Hoenkamp, 1987; Levelt, 1989).

Vigliocco, Butterworth, & Semenza (1995: 188) quoted some speech examples from (Stemberger, 1985: 154) that support this view that agreement is computed after lexical heads have been exchanged. In these examples, subject-verb agreement is based on the grammatical (syntactic) number features specified in the “wrong” subject.

- (2.2) a. Most cities are true of that. (intended meaning: that is true of most cities)
b. You're too good for that! (intended meaning: that's too good for you)

The minimalist view is consistent with the hierarchical encapsulated model in which production processes are separated into several distinct processing stages. The model I will discuss next is the one presented in Bock and Levelt (1994), one of the best

known of the hierarchical encapsulated models. This model consists of three stages or levels. The first stage (*message*) is the formulation of a non-linguistic conceptual representation. The second stage (*grammatical encoding*) includes both the selection of appropriate lexical concepts (entries in the speaker's vocabulary) and the assembly of a syntactic framework. During this stage, each lexical concept is mapped onto its abstract syntactic representation and the syntactic part of speech planning (including the computation of agreement) takes place. *Phonological encoding* is the third stage of the model during which the actual sounds to be produced are spelled out.

Bock and Levelt (1994: 946-948) explain that the *Message* captures features of the speaker's intended meaning and provides the raw material for the processes of grammatical encoding. Grammatical encoding is grouped into two sets, *functional* and *positional processing*.

Lexical selection is the primary subcomponents of functional processing which involves the identification of lexical concepts and the *lemmas* that are suitable for conveying the speaker's message. Lemmas carry the grammatical information associated with individual lexical concepts, such as their form class (noun, verb, etc.). *Function assignment* involves the assignment of grammatical roles or syntactic function (e.g., subject-nominative, object-dative). *Positional processing* fixes the order of the elements in an utterance. *Constituent assembly* is the creation of a control hierarchy for phrasal constituents that manages the order of word production and captures dependencies among syntactic functions. *Inflection* involves the generation of fine-grained details at the lowest levels of this structure. Finally, phonological encoding is the stage in which the phonological content of the utterance is spelled out.

According to Bock and Levelt (1994), in this model, the flow of information between the levels is unidirectional, i.e. the information flows from message to phonological encoding. The system is *modular*; it means that there are specialized processing mechanisms to carry out particular processes, and these processes are unaffected by information elsewhere in the system (dissociation among the use of semantic, syntactic, and phonological information).

Based on this model, agreement is a syntactic process and as such is not affected by semantic factors. Semantic and conceptual information affect message formulation and the mapping from the message to the grammatical stage of production. Similarly, the morphological or phonological form of the lexical head will not feedback to influence agreement with the verb (the phonological encoding is after the grammatical encoding and cannot affect agreement process).

So, the results reported by Bock and colleagues are consistent with the encapsulated hierarchical model. According to Vigliocco et al. (1995: 188), in this model agreement works in the following way: First, the number feature of the noun is formed, then the feature is just copied to the verb. Then the correct morpho-phonological form of the noun and the verb are retrieved in the following stage. The phonological form of the noun is not able to affect the production of agreement because the Number (of verb) has been computed in the previous stage. (Figure 2-1)

Evidence for Maximalism

Many recent studies on agreement have showed clear effects of non-syntactic factors and have thus challenged the idea of the encapsulation of syntax in subject-verb agreement production. The effects of semantic factors on subject-verb agreement have been reported by many researchers. Among many studies, we can refer to the studies

that Vigliocco and colleagues (Vigliocco, Butterworth, & Semenza, 1995; Vigliocco, Butterworth, & Garrett, 1996a; Vigliocco, Hartsuiker, Jarema, & Kolk, 1996b) conducted in Italian, Spanish, Dutch, and French that demonstrated the effect of distributivity of subject head nouns on agreement. Eberhard (1999) demonstrated the effects of distributivity in English sentences when the subject head noun and the local nouns are imageable/concrete nouns. Bock et al. (1999) found effects of collectivity on subject–pronoun agreement. Vigliocco and Franck (1999, 2001) reported the effect of conceptual information on gender agreement in Italian and French.

Vigliocco et al. (1995) showed an effect of morpho-phonological influences on agreement processing in Italian (in which more errors occurred with invariant nouns than with ordinary nouns). Similarly, Vigliocco and Zilli (1999)'s study in Italian showed that gender agreement errors were more common with nouns carrying ambiguous gender marking. And finally, Thornton and MacDonald (2003) showed effects of plausibility on agreement production in English.

The above-mentioned evidence showed that both syntactic and non-syntactic information are influential in agreement production. It could be that conceptual information plays a more effective role in forming agreement. Hence, Vigliocco and colleagues (Vigliocco & Franck, 1999; Vigliocco & Franck, 2001; Vigliocco & Hartsuiker, 2002; Vigliocco & Zilli, 1999) argue that the production system utilizes all available information to aid in the production of agreement.

Vigliocco & Frank (1999) labeled this general view as *maximalist*. In this framework, accuracy is achieved by using additional information available to the system

which could be useful because it protects against information loss. Unnecessary conceptual information can strengthen the syntactic information.

Vigliocco and Frank (1999) mention that this approach is compatible with computational psycholinguistic models that use a unification mechanism for syntactic structure building. According to Vigliocco, Butterworth, & Garrett (1996 a: 266-267), agreement is a relationship for number, person, and/or gender between two (or more) elements in a sentence. In subject-verb number agreement, the number-person-gender relationship is between the subject and its verb. Based on the Minimalist approach, this relationship is defined by “feature copying”. But, computational psycholinguistic models believe that this relationship is produced by a “unification” approach to agreement. According to this approach, each of the two elements involved in the agreement relation express some information about that relation. Through unification, the information of these two elements (e.g. subject and verb) is merged and creates the agreement relation.

So, based on this view, features are unified (i.e. they are not copied or transported from one element to another) and as a result they can be shared by elements of different branches of syntactic structure. This implies that the elements (e.g. subjects or verbs) have information about the structures they can potentially be combined with, in addition to the information about their meaning and phonology. Unification is not directional in nature because the information of the involved elements is merged. This point is particularly useful when thinking about Persian, which I will turn to after the next section.

Current Psycholinguistic Accounts and Theories

Linguistic theories have different views concerning agreement. Chomsky (1965) considered agreement to be the rewriting of terminal symbols. In this view, agreement rules were treated as similar to rules of assimilation in phonology. In this way, agreement has a minor role in the syntax. But, other accounts Gazdar et al. (1985) and Pollard and Sag (1994) treated agreement as the core of syntax.

There are different positions in psycholinguistics that explain about the mechanism of agreement in language production. Bock and Middleton (2011) mention five psycholinguistic accounts; control account with Marking and Morphing model (Eberhard et al. 2005), constraint account by Pollard and Sag (1994), semantic integration hypothesis proposed by Solomon and Pearlmutter (2004), production syntax (Franck et al. 2006), and memory retrieval account proposed by Badecker and Kuminiak (2007) . Here, I compare the first two accounts (the control account and constraint account) which are related to the psycholinguistic approaches to agreement discussed earlier (Maximalist and Minimalist).

In order to relate formal systems of linguistics to psycholinguistic issues, Bock & Middleton (2011:1036) classify the approaches to agreement as “control accounts” and “constraint accounts”. Control accounts consider agreement to crucially involve the transmission of features within syntactic structures. According to these accounts, subject number controls verb number. The number feature of the subject (the agreement controller) is transmitted to the verb (the agreement target) and there is no other syntactic mediation between them.

Constraint accounts assume that subject number and verb number to be “parallel products” of the same kinds of information. This means that the number feature, which

is based on semantic structures, is used by both subject and verb. So, the verb number (similar to subject number) is formed by meaning and consequently the verb number is not copied from the subject to the verb.

In both accounts, the origin of the notional number is the speaker's message. Control accounts assume that the subject receives the number from the message. Then the subject plays a mediation role and transports the number feature to the verb. Because the verb does not have a direct connection with the message, it cannot get the number feature directly. So, first the subject creates its number, then the grammatical number of the subject (singular or plural) is transported to the verb. On the other hand, the constraint view assumes that both subjects and verbs have a direct connection to the notional number in the message and that they create (inflect) their number based on the notional number in the message. So, the retrieval and inflection of subject number and verb number happen independently. The notional number in the speaker's message is the same but the subject number and verb number could be the same or different. Bock & Middleton (2011) argue that if the subject number differs from verb number, then a unification process will align the differing features. (Figure 2-2)

Linguistic and psycholinguistic approaches to agreement have represented both the control and constraint accounts. In linguistics, generative grammar from its first version up to the latest version has included the "control mechanisms as part of the mainstream". This means that the features of verb are determined by subject features through control mechanism. There are also formal constraint mechanisms for agreement. Bock & Middleton (2011) discuss Pollard and Sag (1994) in this regard.

According to Pollard and Sag (1994), the subject and verb carry independent values that are constrained by referential number on their indices. Agreement is the outcome of the “reconciliation” between the information of the indices. So, this view considers agreement as the outcome of a few retrievals of “number semantics” in the process of agreement.

The Marking and Morphing model (Eberhard et al. 2005) is represented in a control theory. According to Marking and Morphing, only subject noun phrases and pronoun phrases (crucially, not verbs) can get notional number values. Verb number reflects the grammatical number of its controller (i.e. the subject noun phrase). Pronoun number reflects the notional number of its antecedent. Verb agreement shows a small and systematic effect of the notional number (e.g. distributivity, collectivity) of the subject (controller). Any attraction effect on number agreement is due to the grammatical number (not the notional number) of the attractor. This means that the notional number of the attractor does not have any effect in the attraction effect (similar to minimalist view discussed earlier). Figure 2-3 shows the model. (Figure 2-3)

On the other side, the constraint position has been tested by Haskell and MacDonald (2003) and Thornton and MacDonald (2003). Vigliocco and Hartsuiker (2002, 2005; see also Vigliocco and Franck 1999, 2001) endorse a related view under the heading of Maximalism. According to Maximalist view, meaning is scattered in the agreement process, and all the elements of the agreement have notional number features.

Bock & Middleton (2011) argue that constraint-based, maximalist approaches (not control approaches) can better explain notional agreement. Constraint-based

approaches emphasize the importance of meaning and notional number as a factor which interacts with the grammar in agreement. Because although the effect of notional number may be much less than grammatical number, it has been reported by many experiments. In fact, agreement is the outcome of both semantic and syntactic interaction.

So, following Pollard and Sag (1994), constraint-based approaches assume that the agreeing elements (e.g., subject and verb) involve a relationship in which both subjects and verbs will get information about reference. In fact, both subjects and verbs independently have access to notional number. In this way the constraint view can explain the effects of notional number on agreement.

Another advantage of the Constraint-based view which Bock and Middleton (2011) discuss is that it can explain the attraction effect in the same framework as it does for normal agreement. The Constraint view holds that canonical agreement is the situation in which the typical semantic and grammatical constraints align for agreement (based on the meaning, structural distances, and morphological cues). But, variations such as attraction can happen if the semantic, structural, or morphological constraints are outside the normal ranges.

This approach does not yet have a detailed theory or model of agreement production, but Thornton and MacDonald (2003) discuss how agreement may be computed from a constraint-based perspective. According to this account, the process of subject-verb agreement involves the integration of multiple sources of information as part of producing an inflected verb form. Different factors have different degrees of influence in this process, based on the reliability of the constraints of a particular verb

form. For example, the grammatical number of the noun is a stronger cue to verb agreement than conceptual number and so it has stronger influence. In fact, according to their account, the effect of grammatical number of the noun is so high that it may be considered as the dominant constraint that can hide the effect of less important factors.

Thornton and MacDonald (2003) examined the effect of plausibility in particular on agreement. But, they also discuss the role that other probabilistic constraints may play in agreement, including distributional information in the input, that is, the probabilistic patterning of linguistic information, including phonemes, syllables, words, and phrases. In a constraint-based framework, multiple cues are integrated in the production of subject-verb agreement. By testing the effect of different factors on the optional subject-verb agreement in Persian, I believe that the effect of some of the cues such as grammatical number is very important and may be universal in languages while the effect of some other cues may be weaker and sensitive to specific languages.

Psycholinguistic Approaches and Agreement in Persian

Explaining the process of optional subject-verb agreement in Persian is not easy. As explained in Chapter 1, in Persian the verb agrees with its subject for number and person. The verb endings are markers of person and number of the subject/agent of the sentence. Since Persian is a pro-drop language and the subject of the sentence can be dropped in most of the sentences, the role of verb endings for marking the agent/subject of the sentence is very important. Persian grammarians and linguists have reported the optionality of subject-verb number agreement when the subject of the sentence is inanimate plural noun. This means that when the subject of the sentence is an inanimate plural noun, the related verb can be singular or plural and both forms of the verb are grammatical, acceptable and widely used in spoken and written language.

Minimalist and control account, as explained above emphasize the effect of syntactic factors in the process of agreement. Subject-verb agreement is formed by copying the features of subject (as source) to verb (as target). Clearly, this approach and the related models of speech production may not be able to explain the optional subject-verb number agreement of Persian. Because the Number feature of the subject nouns of these grammatical acceptable sentences is [plural] while the verbs could be [plural] or [singular]. It is worth noting again that all the experiments about the production of agreement have used attraction effects and elicitation of errors (ambiguous preambles/ ungrammatical data) in order to study the effect of syntactic and non-syntactic factors in agreement. However, the mismatched form of the verb (optional agreement) in Persian are in grammatical and acceptable sentences. Even sentences without attraction effects can have optional agreement (singular or plural verb).

I believe that maximalist approaches and a constraint-based account are better suited to account for subject-verb agreement in Persian. A constraint-based, maximalist approach assumes the interaction of syntactic and non-syntactic information during the computation of agreement. Hence, in addition to grammatical information, conceptual information is also taken into account. Also, it can explain the attraction effect of semantic, structural, or morphological constraints outside of the normal range of the agreement.

In this dissertation, through five experiments, I tested the effect of syntactic and non-syntactic factors in the production of subject-verb number agreement in Persian. Based on the provided evidence of the factors affecting subject-verb agreement process, I believe the effect of grammatical and conceptual information along with the

syntactic and morphological attraction effect of object nouns (as a non-subject local noun) can be factors in the optional subject-verb agreement found in Persian. Based on the constraint approach, conceptual information is predicted to be influential in computing agreement. So, in addition to the syntactic information from the subject, object and verb, conceptual information can also be considered as a crucial non-syntactic factor involved in the optional subject-verb agreement in Persian. This would be in line with the idea of *unification* used in the maximalist approach. That is, contrary to the minimalist approach, my hypothesis is that verb does not copy the number features from the subject and instead the number on the verb is the result of the unification of available information in different elements of the sentence.

Syntactic Factors Influencing Subject-Verb Production and Processing

In this section I now turn to the factors that have been shown to have an impact on subject-verb agreement, including reviewing prior experimental work discussed above in greater detail. Crucially, in all of the languages tested, subject-verb agreement is obligatory.

Attraction Effects

Research in psycholinguistics investigating subject-verb agreement in production started with seminal work by Bock & Miller (1991), who conducted a series of experiments that elicited agreement errors under controlled circumstances in order to examine the process of subject-verb agreement. In these experiments, participants were provided with series of preambles that consisted of a subject head noun and another noun in a post-modifying prepositional phrase. This interfering noun, called the “local” noun, was located between the subject head noun and its verb. The number of the head noun and local noun were systematically varied in order to explore the effect of

the local noun on the production of subject-verb number agreement. An example is shown below in (2.3)

- (2.3) a. Head-SG – Local-SG (match): *the key to the cabinet*
b. Head-SG – Local-PL (mismatch): *the key to the cabinets*
c. Head-PL – Local-SG (mismatch): *the keys to the cabinet*
d. Head-PL – Local-PL (match): *the keys to the cabinets*

Participants were instructed to repeat the preamble and complete the sentences with their own words. The number of agreement errors that participants made was analyzed. The results from Bock and Miller showed that the rate of errors in the mismatched conditions was markedly higher than in the matched conditions. This pattern indicated that the local noun did indeed affect subject-verb agreement. This effect is known as an “attraction” effect, as the number of the local noun “attracts” the verb to appear to agree with it instead of the subject noun. Interestingly, the attraction effect was larger when the head noun was singular and local noun was plural compared to the reversed mismatch in which the head noun was plural and local noun was singular.

This attraction effect has been replicated and extended by many researchers since, including: Bock & Cutting (1992), Bock & Eberhard (1993), Eberhard (1997), and Eberhard (1999) in English; Vigliocco, Butterworth, & Semenza (1995) in Italian; Vigliocco, Butterworth, & Garrett (1996a) in Spanish and English; Vigliocco, Hartsuiker, Jarema, & Kolk (1996b) in Dutch and French. All of these studies have reported an effect of attraction for local nouns, and much work has focused on determining the factors that increase agreement errors in speakers. Researchers have relied on the

attraction effect of local nouns and used elicitation of agreement errors under almost equal conditions to test the effects of syntactic and non-syntactic features on subject-verb agreement.

Only Syntactic Factors

As we saw above, agreement is traditionally considered a syntactic phenomenon (e.g. Corbett, 1994). As such, it could be a solely syntactic process insulated from conceptual or other non-syntactic influences (cf. the discussion of minimalism above), and there is some experimental evidence supporting this view (e.g. Bock & Miller (1991), Bock & Eberhard (1993), and Vigliocco, Butterworth, & Garrett (1996a; Experiment 3 & 4).

Continuing our discussion of Bock & Miller (1991), they also tested the effect of number, animacy, distributivity and length of the local, subject-modifying phrase. In three completion task experiments, participants were provided with a series of preambles (such as “*the key(s) to the cabinet(s)*” and “*the label(s) on the bottle(s)*”). The Number, Animacy, and Concreteness of the head noun and the noun at the post-modifying prepositional phrase (i.e. the local noun) were manipulated and the number of head noun and local nouns were either matched or mismatched. While, as discussed above, there was an attraction effect, the animacy and concreteness of the local noun (e.g. *the author(s) of the speech(es) vs. the speech(es) of the author(s)*) did not show any effect on the rate of agreement errors.

Then, they tested the role of animacy in sentences that also manipulated the amount of material separating the head noun from the verb (e.g. “*the key(s) to the cabinet(s)*” vs. “*the key(s) to the ornate Victorian cabinet(s)*” and “*the label(s) on the bottle(s)*” vs. “*the label(s) on the tamperproof medicine bottle(s)*”). The result showed no

significant effect of the length on agreement errors. From this, Bock and Miller concluded that only syntactic features of subject (e.g. number) are influential in agreement, while notional properties (e.g. concreteness, animacy) and the positions of noun phrases do not have any effect.

Vigliocco, Butterworth, & Garrett (1996a) (in Experiments 3 & 4) tested the attraction effect of distributive nouns in English, using a similar design and set of materials as Bock & Miller (1991). In fact, they changed only two of Bock and Miller's target preambles. These preambles consisted of a singular head noun and a plural local noun without a number-matching control. There were two conditions: a single token condition (e.g., *the letter from the lawyers*) and a multiple token condition (e.g., *the label on the bottles*). In their Experiment 3, participants heard a series of these sentence preambles and repeated them and then completed each with their own words. The results showed that English speakers were not sensitive to the distributivity manipulation.

Experiment 4 used the same materials as Experiment 3, but matched each of the preambles with a semantically plausible adjective. In each trial, the participants saw on the computer screen an adjective immediately followed by a sentence preamble (e.g. *"threatening"* and then *"the letter from the lawyers"*). They were supposed to make up a question using the sentence beginning and the adjective. (e.g. *"Is/was the letter from the lawyers threatening?"*). The results of this experiment, similar to Experiment 3, did not show any distributivity effect and was constant with Bock and Miller (1991).

The null effect of distributive number was also replicated by Bock, Eberhard, and Cutting (1992) who used the same set of distributive-referent and single referent

phrases as Bock and Miller (1991) e.g. “the key to the cabinets...” vs. “the picture on the post cards”. Although the subject head nouns of these two preambles are grammatically singular, they are conceptually different. In the first preamble, the subject head noun is a single token (conceptual meaning is singular), meaning that there is physically one key. But, for the second preamble, the subject head noun is a multiple token (the conceptual meaning is plural): there are multiple copies of a picture distributed across several postcards.

Bock and Eberhard (1993) conducted a series of completion task experiments using a similar design to examine whether the number information used in the agreement is notional (e.g. based on the singularity or plurality of the referent of the subject noun phrase), lexical (e.g. the grammatical number of the head of the subject NP) or morphological (e.g. the head of the subject NP has the plural phonological feature).

Participants were provided with a set of preambles consisting of a subject head noun phrase followed by a modifying prepositional phrase in which the local noun matched or mismatched the head noun with respect to the three kinds of numbers (notional, lexical, and morphological). Similar to the previous studies in agreement, the participants were supposed to repeat the preambles and complete the sentences with their own words.

In order to test the effect of phonology or morphophonology of the plural nouns, the target local nouns of Experiments 1 & 2 in Bock & Eberhard were pseudoplural nouns (singular nouns whose endings were matched to the ending of true plurals in

their phonology) and the fillers were singular and true plural nouns. Below are two examples:

(2.4) Experiment 1: *The player on the course*_{pseudoplural}/*court*_{singular}/*courts*_{plural}

(2.5) Experiment 2: *The ship for the cruise*_{pseudoplural}/*crew*_{singular}/*crews*_{plural}

Their results showed no effect of pseudoplurals on number agreement, which indicates no evidence of phonologically conditioned agreement errors. This means that there was no tendency to produce agreement errors after singular local nouns that ended in the same sounds as plural forms (e.g. *course* vs. *courts* & *cruise* vs. *crews*).

The next question was whether it is the nominal form of plural inflection itself or the notional meaning of plurality that controls agreement. To test this, the authors examined the effect of regularity of plural noun markers. Participants repeated and completed a set of preambles with regular plural (plural in meaning and form) and irregular plural (plural in meaning but not in form) local nouns (e.g. *the trap(s) for the mouse/mice/rat/rats*...). The results here showed no effect of the regularity of the plural marking on agreement errors: The results for irregular plurals (e.g. *foot-feet*) were comparable to regular plurals (e.g. *hand-hands*).

The results of these experiments suggest that the number agreement is not controlled by the concrete feature of morphological marking (i.e. plural marking) but instead is controlled by some abstract specification of the number of the subject. In their final experiment, Bock and Eberhard addressed the nature of this abstract specification, and in particular whether it is based on meaning or lexical stipulation or number. They used preambles with collective target local nouns to examine whether the local nouns

cause errors that reflect their notional number (plural) or their subcategorized number (singular). (e. g. *the condition of the fleet/ fleets/ ship/ ships....*).

When singular collectives served as local nouns, the agreement results were essentially the same as the results for the singular individual nouns. This suggests that the participants treated the singular collective nouns as singular for the purpose of verb agreement. So, even for the verbs that disagreed with the subject in number, subcategorical rather than notional number predominated in the selection of verb number. From all of this, Bock & Eberhard (1993) concluded that phonological or semantic elements have very little influence on agreement. The control of verb number is with a lexical specification of plurality and not with plural meaning or regular plural marking. In fact, it is the subcategorized number of the subject head noun that controls the forms of the agreeing verb, not the number meaning or plural morphology.

So, the results of these studies showed that subject-verb agreement was influenced by attraction from the number of the local noun but they did not show any effect of animacy of the local nor any effect of length of the modifying phrase. These studies did not report any effect of plural phonology (e.g. /s/), plural morphology (regular or irregular plural nouns), or notional number (the effect of distributive or collective nouns) in subject-verb number agreement in English.

Hierarchical Structure

This section includes a summary of an study testing a syntactic factor (the effect of hierarchical structure of the local noun in the subject-verb agreement). Although it is about the effect of a syntactic factor, it does not reject any potential non-syntactic factors. So, I consider it here as something different from the above section on work finding “only syntactic factors”.

Bock & Cutting (1992) used a completion task in three experiments to examine the effect of length and hierarchical structure. They compared the agreement errors after phrasal (subject modifying prepositional phrase) and clausal modifiers (adverbial clause).

In their first two experiments, they used sentence fragments with complex subject NPs in which the subject head noun was followed by a prepositional phrase or by a relative clause post modifier (as in the following example).

- (2.6) a. "The report of the destructive forest fire(s)..."
b. "The report that they controlled the fire ..."

The participants were instructed to repeat the preamble and complete the sentence with their own words. The results showed that errors were more likely following structures like (a) than (b), because in sentence (b), the local noun is separated from the subject head noun by clause boundaries. This result suggests that the local NP affects the agreement more frequently when it is in the clause of the subject head noun than when it is embedded in a different clause. In fact, agreement errors were more frequent after phrases than after clauses that separated the verb from its head noun: The clausal modifiers caused fewer agreement errors compared to phrasal modifiers.

In their third experiment, the length of the modifying prepositional phrase and the adverb clause were increased to test the effect of long phrases and clauses. This experiment was a replication of Experiment 1 of Bock and Miller (1991), but the conditions in this experiment were better controlled. Also, the material was designed for

hierarchical rather than “serial prediction”. The result of this experiment showed that the longer phrases caused more errors while the longer clauses did not.

- (2.7) a. “*The report of the destructive forest fire(s) ...*”
b. “*The report that they controlled the forest fire(s) ...*”

From this, the authors concluded that “clause boundaries delimit and help to insulate the specification of verb agreement, so that the processes responsible for agreement are most sensitive to noun phrases and verbs in the same clause.” These results support the hierarchical hypothesis.

Non-Syntactic Factors influencing Subject-verb Production and Processing

In recent years, many studies have challenged the idea that the agreement is only a syntactic phenomenon. Many researchers have tested the effect of semantic factors such as distributive and collective nouns. Other research has tested the effect of plausibility and morphophonological influences on agreement. In these studies, the researchers used the attraction effect of the local noun first reported by Bock and Miller (1991) to test the effect of non-syntactic factors.

Distributivity

Vigliocco, Butterworth, & Semenza (1995) and Vigliocco, Butterworth, & Garrett (1996a) have both examined the effect of *distributive* nouns such as “the label on the bottles”, where the semantics of the phrase implies the existence of multiple labels but the noun is grammatically singular. Vigliocco, Butterworth, & Semenza (1995) tested the effect of semantics (i.e. the distributivity of subject head noun) in Italian. In their first experiment, they used the same methodology of Bock and Miller (1991). The preambles consisted of a subject head noun followed by a modifying prepositional phrase. One of the variables was the distributivity of head noun, with a single token condition (e.g., *the*

road to the lakes) vs. a multiple token condition (e.g., *the name of the children*). The participants heard a series of sentence preambles which they repeated and completed with their own words. The result showed an effect of distributivity: there were more errors when the head subject was a multiple token noun.

In Experiment 2 of Vigliocco et al. (1995), participants first saw an adjective marked for singular or plural (e.g. *colorato*, colored-M,SG) then a sentence preamble (e.g. *the picture(s) on the exercise book(s) ...*). Again, one of the variable was distributivity (single token vs. multiple token) of the preamble. Participants were supposed to repeat the preamble and complete the sentence using the matched adjective. The results of Experiment 2 confirmed the role of semantics (distributivity) in the subject-verb agreement. These results were contrast to Bock and Miller (1991) who did not find any effect of distributivity in English.

Vigliocco, Butterworth, & Garrett (1996a) in their experiments 1 and 2, tested the effect of distributivity in Spanish. The preambles consisted of a singular/plural head noun and a singular/plural local noun. There were two conditions: a single token condition (e.g., *the road to the lakes*) vs. a multiple token condition (e.g., *the name of the children*). The participants saw a series of sentence preambles which they repeated and completed. The results showed an attraction effect for local nouns, and moreover it showed an effect of distribution of agreement errors in Spanish: there were significantly more errors in the multiple token condition than in the single token condition.

In Experiment 2, Vigliocco et al., (1996a) used the same materials of Experiment 1 in Spanish. In order to increase the error rate, they used the advantage of subject-predicate Number and Gender agreement. They matched each of the preambles with a

semantically plausible adjective. This is the same technique employed by Vigliocco et al. (1995) in Italian.

- (2.8) a. El abuelo de los nino-s es viejo
the.M.SG uncle.M.SG of the.M.PL child.M-PL. is.3SG old.M.SG
'the uncle of the children'
- b. Los abuelo-s de los nino-s son Viejo-s
The-M.PL uncle.M-PL of the.M.P child.M-PL are.3PL old.M-PL
'the uncles of the children'

In each trial, the participants saw an adjective (singular or plural) immediately followed by a sentence preamble (with singular or plural subject head noun and local noun) . For example, they saw *viejo* (old.M.S) and then *El abuelo de los ninos* (The.M.S uncle.M.S of the.M.P children.M.P). They were supposed to repeat the preamble and then complete the sentence, saying *El abuelo de los ninos es viejo* (The uncle of the children is old). The point of this experiment was that the adjective could be “congruent” or “incongruent” with the subject head noun for Number. So, the participants were supposed to produce the matched adjective (singular or plural) and matched verb (singular or plural).

The results showed that the error rate was higher compared to Experiment 1: The error rate was higher when the adjective was not matched for the Number. The authors concluded that the high rate of errors was due to the effect of the mismatched adjectives. And finally, the error rate was higher for multiple token items (e.g. *the uniform of the soldiers*) than for single token items (*the teacher for the girls*), demonstrating an effect of distributivity.

Taken together, the results of the studies (Vigliocco et al. 1995 & 1996a) conducted in Italian, Spanish, and French together demonstrated a clear effect of distributivity: more plural verbs were produced following distributive phrases than following non-distributive phrases.

Concreteness/ Imageability of Distributive Nouns

As explained above, Bock and Miller (1991) used the attraction effect to test the effect of conceptual number on agreement. In their materials, they used sentences with singular subject head nouns and plural local nouns of a modifying prepositional phrase.

- (2.9) a. the key to the cabinets...
b. the picture on the post cards...

Although both of the sentence types have grammatically singular subject head nouns, the conceptual meaning of sentence (b) is plural because it refers to multiple tokens or copies of an entity distributed across the referent of the local noun (i.e. multiple copies of a picture distributed across several postcards). They found no effect of conceptual number and concluded that conceptual number (i.e. the distributivity of subject head noun) did not have an effect on subject-verb number agreement. This result was replicated by Bock, Eberhard, and Cutting (1992) and Vigliocco, Butterworth, and Garrett (1996a; Experiment 3). Bock, Eberhard, and Cutting (1992) used the same distributive-referent and single-referent phrases as Bock and Miller (1991). Vigliocco, Butterworth, and Garrett (1996a; Experiment 3) used all the material of the Bock and Miller (1991) except for two distributive-referent phrases.

On the contrary, the studies by Vigliocco, Butterworth, & Semenza, 1995) in Italian, Vigliocco, Butterworth, and Garrett (1996a; Experiment 1 & 2) in Spanish, and

Vigliocco, Hartsuiker, Jaraema, & Kolk (1996b) in French and Dutch did show an effect of distributive number in subject-verb number agreement.

Related to these conflicting results, Eberhard (1999) investigated the effect of conceptual number of distributive subject phrase on verb agreement in English. More specifically, Eberhard tested whether the concreteness/imagability of distributive referents had any effect resembling their conceptual number. For this study, the preambles of Bock and Miller (1991) were first tested for concreteness/imagability and less concrete preambles were removed and replaced by new concrete preambles.

In the first experiment of the study, the participants saw each of the new concrete preambles of distributive-referent phrases vs. single-referent phrases, along with a related picture on a computer screen. Participants repeated the preamble and then completed the sentence. The results showed an effect of distributivity in English sentences: The rate of agreement error was higher for the distributive subject head nouns. More plural verbs were used with the preambles with multiple token subject head nouns than with single token ones.

In Experiment 2, the same preambles were used without pictures. The participants saw only the concrete preambles, repeated them and completed the sentences. The results here showed an effect of distributivity, but this effect was less than the effect in Experiment 1. This difference could be due to the effect of the pictures providing a more concrete and hence more accessible representation of the phrases' conceptual number.

In the third experiment, they tested the materials from Bock & Miller (1991). The participants saw each of the preambles (without pictures), repeated the preambles and

complete the sentences. The result shows no effect of distributivity, the same as Bock and Miller (1991)'s own findings.

In Experiment 4, the phrases of Bock and Miller (1991) and the new phrases used in Experiments 1 and 2 were tested together. In this experiment, participants read both experiments' preambles and rated them (on a scale of 1 to 7) according to the ease or difficulty with which it evoked a mental image of its referent. The result showed that the distributive-referent preambles used in Experiments 1 and 2 were rated as easier to imagine than the distributive-referent preambles taken from Bock and Miller (1991).

Finally, in Eberhard's Experiment 5, English translations of phrases from Vigliocco, Hartsuiker, Jaraema, & Kolk (1996b; Experiments 2 & 3) were tested to determine whether the results of these experiments were due to the imageability of the preambles. Similar to Experiment 4, participants read the preambles and rated each one (on a scale of 1 to 7) according to the ease or difficulty with which it evoked a mental image of its referent. The result showed that the distributive-referent preambles used in Vigliocco et al. (1996b; Experiments 2 & 3) were rated easier to imagine than the distributive-referent preambles of Bock and Miller (1991).

These results from Eberhard (1999) demonstrate that effects of distributivity can also be found in English under certain circumstances. Eberhard attributed the difference between her results and the failure to find effects of distributivity in Bock and Miller (1991) and the two replications (Bock et al., 1992; Vigliocco et al., 1996a) to differences in the imageability of the preambles phrases. Eberhard suggests that the failure was due to the abstract nature of distributive referent subject phrases in the other studies.

She explains that when subject phrases are highly imageable, their conceptual number can reliably influence the specification of number on an agreeing verb. This result indicates that the concreteness or imageability of the conceptual representation appears to affect the availability of conceptual number in the agreement process.

Collectivity

Bock, Nicol & Cutting (1999) used the same procedure as Bock and Miller (1991) to assess whether number agreement is based on notional meaning (conceptual meaning) or grammatical meaning (form-based). Using a completion task, the number agreement in verbs, reflexive pronouns and tag questions was examined under controlled conditions. The head of the subject noun phrase could be either singular, plural, or a collective noun (nouns which are notionally plural but grammatically singular). Groups of participants were instructed to repeat the preamble and complete the sentence with a verb or a reflexive pronoun or repeat the complete sentence and add a tag question to it as shown (underlined) in the following examples:

- (2.10) a. Verb group: the actor(s)/cast in the soap opera(s) was/were popular.
- b. Reflexive pronoun: the actor(s)/cast in the soap opera(s) watched himself/ themselves.
- c. Tag question: the actor(s)/cast in the soap opera(s) rehearsed. Didn't he/they?

The results showed an effect of collectivity on subject-verb agreement. In their study, collective head nouns such as “*cast*”, followed by plural noun in the post-modifying phrase, elicited 60% plural verbs. For ordinary singular head nouns (again with plural noun in the post-modifying phrase), this rate was 10%.

It was also found that in sentences with collective head nouns, verbs were more sensitive to the grammatical number while pronouns were more sensitive to the notional number. The authors suggest that “the pronouns retrieve their number under control from speaker’s meaning but the verbs retrieve their number under control from the utterance’s form.” They concluded that both kind of number can be active in ongoing language production.

Gender Agreement (Conceptual Information)

Vigliocco and Franck (2001) differentiate between *syntactic information* (for noun’s gender: masculine or feminine) and *conceptual information* (referring to a male or female entity). Syntactic information is considered first source of information and conceptual information is the second.

In two completion experiments (1 & 2) in Italian and French, participants were provided with a set of texts introducing a male or female actor (conceptual gender) in preambles composed of a subject head noun, a local noun and predicative adjectives. Participants read each introduction silently, then repeat the preamble and completed the sentence using the adjective. The authors manipulated the congruency between the conceptual gender of a referent introduced in the introduction sentence and the grammatical gender of the noun with which the adjective had to agree. They also manipulated gender match/mismatch between the subject head noun and the local noun. The results showed that errors were more common when the gender of the referent and the gender of the noun were incongruent. The authors concluded that both conceptual and syntactic information were taken into account during grammatical encoding.

In two further completion experiments (3 and 4) in Italian and French, the participants were presented with the same preambles and predicative adjectives, but the introduction texts were not used (to avoid any effect of conceptual information). The authors manipulated the gender match/mismatch between the subject head noun and the local noun. The results showed a gender mismatch effect. Moreover, comparing the results of the context and no-context experiments indicates that having an incongruent context hurts performance (i.e., creates agreement errors) whereas having a congruent context has some benefits.

Thus, working on gender agreement in Italian and French, Vigliocco and Franck (1999, 2001) found differing agreement behavior depending on whether conceptual information was consistent with linguistic gender, conflicted with linguistic gender, or was neutral. Discussing maximalist positions with respect to gender agreement, Vigliocco and Frank (2001:370) mention that the Maximalist approach argues that both the grammatical gender of a noun and the conceptual information are used to maintain accuracy. If the grammatical gender of the noun and the conceptual information are compatible, the conceptual information reinforces the agreement process. But, conceptual information poses problems if that information is different from the grammatical gender (i.e., the syntactic information). In this case, there is a competition between the two kinds of information and it makes speech production more difficult.

Morphology

Vigliocco, Butterworth, and Semenza (1995) compared rates of agreement errors for invariant plurals and ordinary plurals in Italian. Invariant plurals occur when the singular and plural forms of a noun are the same, like English *fish* and *sheep*. For these nouns, morphophonology does not show the number (singular and plural forms are the

varied in its relationship to the verb (e.g., *composers* can plausibly be *praised* but not *played*).

The results of both experiments showed that the participants produced more agreement errors when the past participle could plausibly apply to the local noun (e.g., *composers* can be *praised*) than when it could not (*composers* cannot be *played*). The authors concluded that agreement production is sensitive to plausibility effect. The plausibility of subject head noun affected the production of subject-verb agreement. In other words, intervention of a plausible (rather than implausible) local noun between the subject head noun and its verb causes more agreement error. Finally, Thornton & MacDonald (2003) discussed that manipulation of plausibility involve semantic (non-syntactic) information outside of the subject noun phrase.

Comprehension of Agreement

In the literature of the production and comprehension of agreement, the absence of semantic effects was taken as initial evidence for an independent, encapsulated stage of syntactic processing (e.g. the minimalist approach). But, this claim was challenged by researchers who showed evidence of effects of non-syntactic factors in the production of subject-verb agreement.

Regarding the effect of non-syntactic factors in the comprehension of subject-verb agreement, Vigliocco and Hartsuiker (2002) refer to influential research (e.g., MacDonald, Pearlmutter, & Seidenberg, 1994; Tabor & Tanenhaus, 1999; Tanenhaus & Trueswell, 1995) providing evidence indicating that comprehenders use all available information as the speech signal unfolds (including phonological, metrical, syntactic, and crucially semantic information). *The Constraint-based framework* (MacDonald, Pearlmutter, & Seidenberg, 1994; Trueswell, Tanenhaus & Garnsey, 1994) suggests

that multiple probabilistic sources of information are integrated at the early stage of comprehension.

Following Bock and Miller (1991), many studies used completion tasks in an elicitation paradigm to test the effect of attraction, hierarchy and other non-syntactic factors in the production of subject-verb agreement. Evidence from agreement processing in comprehension can be a useful complement to the evidence from agreement production studies. Wagers, Lau, and Phillips (2009) explain that the results of studies in comprehension of agreement are congruent with the evidence from studies on production. In production studies, researchers measure the rate of agreement errors that the speakers produce to test the effect of different factors. Comprehension studies use *acceptability judgments* (e.g., Clifton, Fraizer, & Deevy, 1999; Haussler & Bader, 2009) or *processing difficulty* as reflected either in differences of reading time s(e.g., Pearlmutter, Garnsey, & Bock 1999), or in different event-related brain potentials (ERPs) (e.g., Kaan, 2002).

Pearlmutter, Garnsey and Bock (1999) used three experiments to examine the process of subject-verb agreement in sentence comprehension. In Experiment 1, they used a *word-by-word self-paced moving window reading methodology*, in which the participants were supposed to read sentences (e.g., *the key to the cabinet(s) was/were rusty from many years of disuse*). The results showed that reading times after the verb were faster if the head noun, the local noun, and the verb were all singular. The reading time after the verb was slower, if either the local noun or the verb was plural.

The eye-tracking paradigm in Experiment 2 showed a similar result: an effect of agreement computations was observed on the word following the verb. Also, processing

disruptions were observed in both agreement violations and locally distracting number-marked nouns. Experiment 3 showed an asymmetry in the pattern of disruptions that is in line with error distributions in language production (e.g., Bock & Miller, 1991).

These results indicated that comprehenders process agreement errors more easily exactly in those situations in which speakers produce more agreement errors. Pearlmutter, Garnsey, & Bock (1999) concluded that agreement is an early, integral component of comprehension, mediated by processes similar to those of production.

Thornton and MacDonald (2003; Experiment 3) also tested the effect of plausibility in the comprehension of agreement. They used an *error-elicitation paradigm in a word-by-word self-paced reading comprehension task*, and manipulated the extent to which the head and local nouns were plausibly related to the agreeing verb. Participants were provided with a complete sentence consisting of a head noun, a local noun of a prepositional phrase, a passive verb, and a “by phrase” (e.g. *the feeling(s) about the undergraduate student(s) was noticed/shared by the dean*). There were eight conditions depending on the singularity vs. plurality of the head noun and the local noun and also the plausibility of the local noun. The head noun (*feeling*) was always a plausible object of the verb (e.g., *the feeling* can be *shared* or *noticed*) but the local noun (*undergraduate student*) varied in its relationship to the verb (e.g., *student* can plausibly be *noticed* but not *shared*).

In order to test the effect of number and plausibility, the participants' reading times at the verb and surrounding words were analyzed. The result showed strong effects of plausibility on the comprehension of subject-verb agreement. There were longer reading times at the verb when both the subject head noun and the local noun

were plausible than in the condition where only the head subject noun was plausible. This indicates that processing was more difficult when both of the noun phrases were plausible than when only the head subject noun was plausible. This result is in line with the production experiments (Thornton & MacDonald, 2003; Experiments 1 and 2).

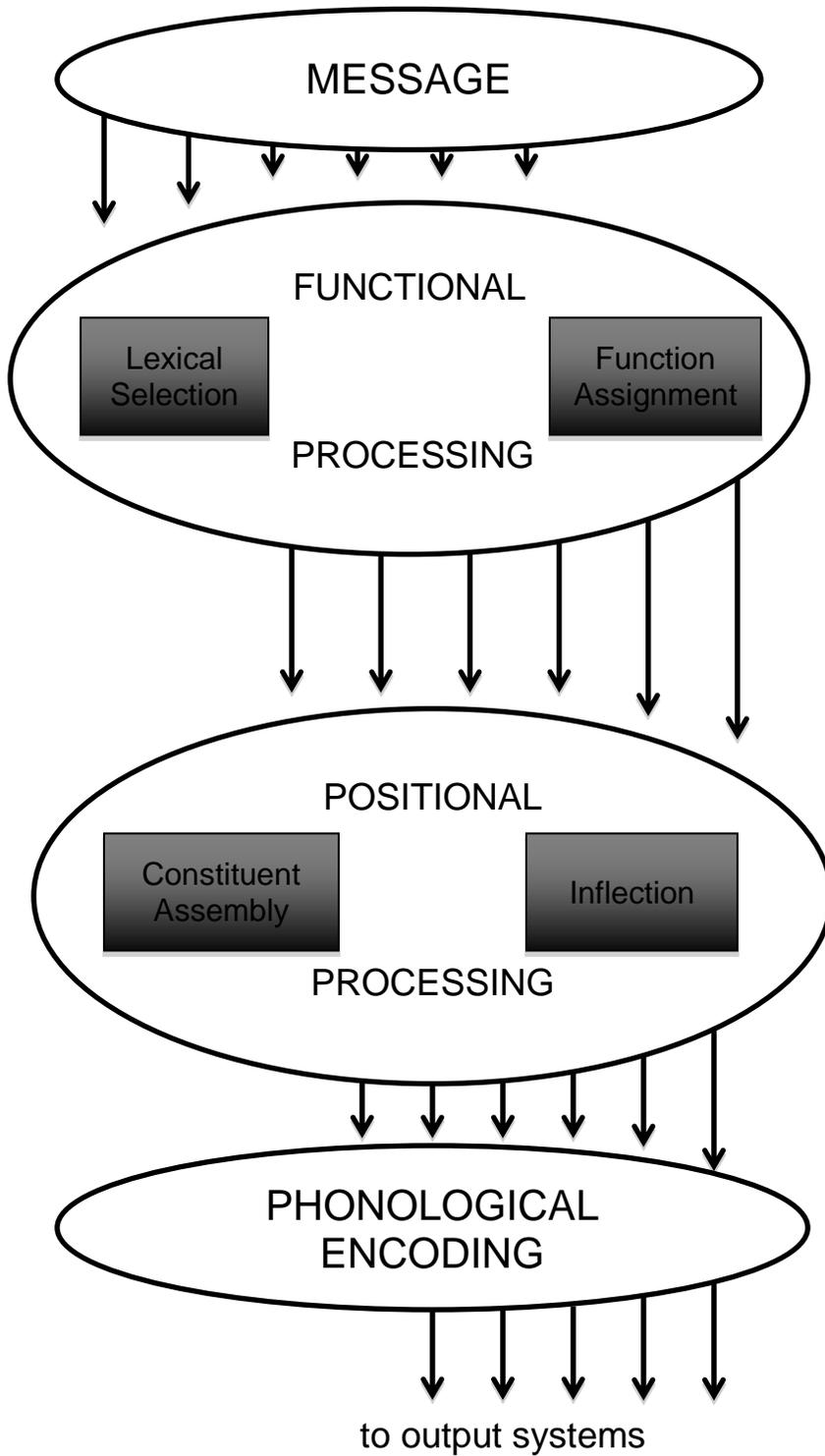


Figure 2-1. Hierarchical encapsulated model by Bock and Levelt (1994)

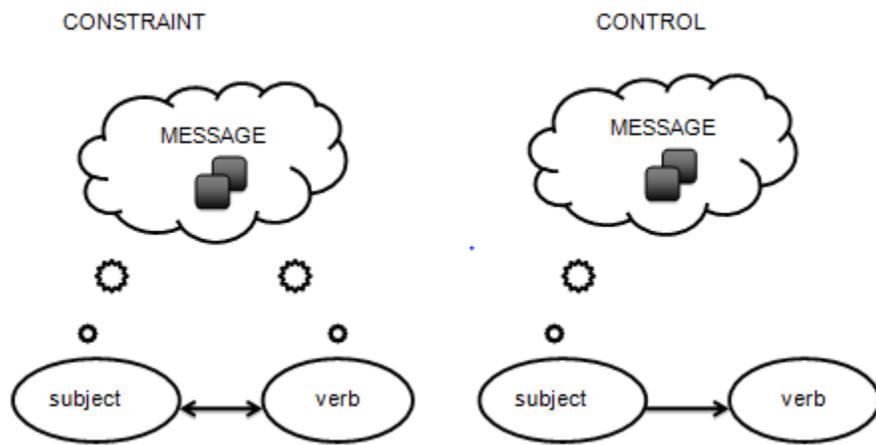


Figure 2-2. Two accounts of the relationship between numerosity

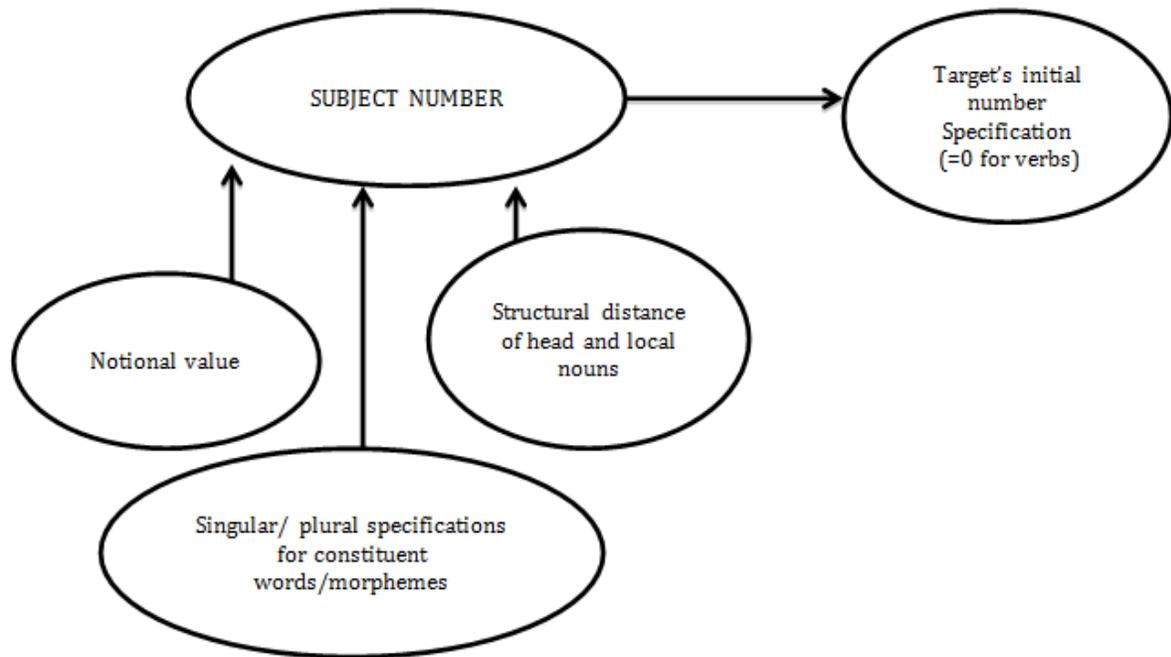


Figure 2-3. Marking and Morphing model of agreement for verb agreement and attraction

CHAPTER 3 EXPERIMENT 1- JUDGMENT TASK

Overview

As discussed in Chapters 1 and 2, there is subject-verb agreement in Persian (for person and number), but this agreement is optional when the subject of the sentence is an inanimate plural noun. In this case the verb of the sentence may be marked for third person singular or plural and both of these forms are acceptable and grammatical.

Lotfi (2006:136-137) explained the potential role of verb type, tense and aspect specifications of the event on the speaker's preference for singular and plural. As discussed in Chapter 1, Lotfi argues that Persian speakers prefer to use plural verbs when the sentence is in the future tense. Further, Lotfi predicts that verb type also has an important impact on agreement. Lotfi's suggestion has not been followed by any systematic experiments investigating the effect of these factors. However, he suggests that it may be more acceptable to have autonomy in actions when the course of events has not finished yet.

Saasat (1996) shows a series of examples from literature texts showing that verbs of inanimate nouns in classic texts were singular, but that in a few exceptional examples the inanimate plural nouns had plural verbs. In these cases, he argues that the inanimate nouns can have plural verbs because they are used metaphorically (e.g. personified as living creatures).

Goals

Acceptability Goals

This experiment had two sets of goals. The first set of goals (which I call “acceptability” in this dissertation) was to experimentally confirm and quantify the existence of optional subject-verb agreement in Persian. It aimed to test whether the Persian comprehenders actually accept sentences with mismatched agreement (i.e., the inanimate plural subjects have singular verbs), and additionally to test the effect of Verb Tense and Verb Type on the acceptability of optional agreement by Persian comprehenders. In other words, this experiment tested whether the tense of the sentence (present vs. past) causes comprehenders to accept a higher proportion of sentences with a mismatched (i.e. singular) verb.

In a pilot study, the effect of future vs. past was tested and the results showed that participants were not using mismatched verb forms with future tense. The reason for this could be the infrequent use of future tense verbs in informal spoken Persian; Persian speakers prefer to use ordinary present tense (see past and present tense in Persian, Chapter 3) to talk about future events. So, the effect of verb tense was tested here using present vs. past tense.

Additionally, I tested whether participants’ acceptance of sentences with mismatched verbs would change as a function of the type of verb used. It is worth noting here that the materials of this experiment were the complete sentence versions of the target preambles used in Experiment 2, and so this experiment also serves to confirm the acceptability of those preambles in Experiment 2.

Role Interpretation Goals

Related to the issues of verb type, a secondary goal of this experiment was to examine the relationship between the acceptability of a mismatched verb form with the perceived thematic role of the subject (what I will call “role interpretation” in this dissertation). Essentially, I wanted to test whether there is any relationship between the degrees of acceptability for singular verb forms and how readers interpret (perceive) the role of the corresponding inanimate plural subject noun. For this purpose, I analyzed the participants’ perceived role of the subject nouns of the sentences with three factors (1) an effect of Verb Tense (present vs. past), 2) the effect of Verb Type (eight types of verbs to be explained in the Material section of this chapter), and 3) the effect of verb number in the participants’ judgment for the role of the subject noun.

Thus, in this experiment, participants gave two types of responses after each of a series of complete sentences that were either in past or present tense: First, they read the sentence and then judged whether it was acceptable in Persian or not. Second, they provided a response about whether they judged the subject of the sentence as a “do-er”, something that was “acted-on”, or neither of these. Since the thematic role of the subject nouns in some of the verb types such as group C (verbs of emission), group D (verbs of instrument), or group G (auxiliary “be”) might not be clearly classified as “do-er” or “acted-on”, I did not limit the participants to only these two options (“do-er” and “acted-on”). They had a third option “none of them”, and could select it as their interpretation for the role of the subject noun, in case they were thinking that the role of the subject nouns are neither “do-er” nor “acted-on”.

Method

Participants

The participants were 29 Iranian native speakers of Persian (15 males and 14 females) between 22- 30 years old (mean 26 years). They were members of the university of Florida community, and participated in the study voluntarily. The participants were late learners of English who had learned this language for the purpose of education and did not have significant knowledge of any other language. All participants had normal or corrected vision and did not have any reported cognitive or neurological impairment. 25 of the participants in this experiment participated in Experiments 3 (the effect of unity) and 4 (the effect of concreteness), which were conducted together and more than one year after this experiment.

Materials

A set of one hundred and twelve target sentences in 4 conditions (past vs. present, and singular vs. plural verbs) were created, divided across 8 verbs types, with 14 verbs of each type. Preparing a list of potential sentences with inanimate plural subject nouns, I classified the sentences into different verb type groups in order to systematically classify them according to their structure and the potential thematic roles that the verbs would assign to the subject of these verbs. The target sentences consisted of an inanimate plural subject noun followed by a combined compound verb. As discussed in Chapter 1, a combined compound verb consists of a non-verbal constituent plus a verbal part. I will next describe the salient features of tense in Persian, and the types of verb that were used in the study.

Past and present tense in Persian

The verbs used in this experiment were either present or past tense. Both of the verbs were indicative and positive. There are two types of indicative present tense verbs in Persian: ordinary present and progressive present. The present tense verbs used in this experiment were the “ordinary” present verbs which can express “generic statement, habitual actions, and universal truths” (Mahootian 1997: 227). There is no tense form in Persian used only for generic statements. The ordinary present is formed by the indicative prefix /mi-/ + present stem + verb ending, as seen in (3.1) below.

(3.1) a. gol-ha ro mi-chin-e
 flower-PL OM IND-pick-3SG
 ‘he/she picks the flowers.’

b. hær ruz gol-ha ro mi-chin-e
 every day flower-PL OM IND-pick-3SG
 ‘he/she picks the flowers every day.’

Although, in Persian progressive (continuous) aspect is shown by the auxiliary verb /dashtæn/, ‘to have’ + the ordinary present tense verb, the ordinary present tense is commonly used to convey the continuous aspect of the action (for this reason, some linguists gloss the prefix /mi-/ as a continuous/ durative marker) and the present progressive verb is used when speakers want to emphasize the continuity of the action.

(3.1) c. gol-ha ro mi-chin-e
 flower-PL OM IND-pick-3SG
 ‘he/she is picking the flowers.’

- d. gol-ha ro dar-e mi-chin-e
 flower-PL OM have-3SG IND-pick-3SG
 'he/she is picking the flowers.'

So, the ordinary present verb can convey the meaning of continuous or incontinuous ordinary present or both of them in one sentence (as the existence of one does not contradict the other; a person can do a durative action every day).

- (3.1) e. hær ruz gol-ha ro mi-chin-e
 every day flower-PL OM IND-pick-3SG
 'he/she picks/is picking the flowers every day.'

- f. hær ruz gol-ha ro dar-e mi-chin-e
 every day flower-PL OM have-3SG IND-pick-3SG
 'he/she picks/is picking the flowers every day.'

Ordinary present can also be used to convey that events took place in the future. In this case, an adverb of future can be added, if needed (Mahootian 1997: 238). Below is a set of examples:

- (3.2) a. bærf mi-bar-e
 snow IND-fall-3SG
 Lit., 'snow is falling.'
 'it is snowing'

- b. færda bærf mi-bar-e
tomorrow snow IND-fall-3SG
Lit., 'tomorrow, snow is falling'
'it's going to snow tomorrow'
- c. hær ruz bærf mi-bar-e
every day snow IND-fall-3SG
Lit., 'every day, snow is falling'
'it snows every day.'

So the present tense verbs in this experiment could have habitual, continuous, or ordinary present meaning.

There are four types of indicative past tense verbs in Persian. Simple past (formed by past stem + verb endings) which conveys the perfective aspect of an action that has been done in the past. This verb tense implies the completion of an action in the past without emphasizing on the duration of the action. The past tense verbs used in this experiment were of this type.

- (3.3) a. gol-ha ro chid
flower-PL OM pick.Past.3SG
'he/she picked the flowers'

The ordinary past tense (formed by the prefix /mi-/ + past stem + verb endings) conveys the imperfective aspect of an action in the past. This verb tense may be used to convey progressive aspect, too.

(3.3) b. gol-ha ro mi-chid
 flower-PL OM IND-pick.Past.3SG
 ‘he/she was picking the flowers’

The progressive past tense (formed by the verb /dashtæn/, ‘to have’ + verb-endings + the indicative prefix /mi-/ + past stem + verb-endings) specifically emphasizes the imperfect aspect and continuity of the action.

(3.3) c. gol-ha ro dasht mi-chid
 flower-PL OM had.3SG IND-pick.Past.3SG
 ‘he/she was picking the flowers’

The fourth type of indicative past tense verb in Persian is Past Perfect (formed by past participle form of the main verb + past tense of the verb “be” + verb endings). This verb tense conveys that an action had taken place before another action in the past. It specifically emphasizes the perfective aspect of the verb.

(3.3) d. gol-ha ro chide bud ke Niki um-æd
 flower-PL OM picked.P be.Past.3SG that Niki came.3SG
 ‘he had picked the flowers when Niki came.’

As was mentioned above, the verbs in this experiment were ordinary present tense vs. simple past tense. The ordinary present tense verbs have imperfective aspect and can have progressive meaning (although they are not progressive). As was mentioned above, both of the present tense verbs (ordinary present and present progressive) imply continuity in the verb (so I did not have any choice for choosing a present verb in Persian with out continuity). For the list of the sentences with present

tense verbs, the participants were told to imagine that the events happen on the same day.

On the contrary, the simple past tense verbs have perfective aspect but do not have progressive meaning. For the past tense verbs, the participants were told to imagine that the events happened the day before. I chose ordinary present vs. simple past tense verbs because ordinary present has imperfective aspect but simple past has perfective aspect. In fact, I selected these two types of verbs to test whether the completion of an action (perfective vs. imperfective aspect of a verb) has any effect on the optional subject-verb agreement or not.

Verb types

Thinking about the types of verbs that inanimate subject nouns can have and the effect of different kinds of verbs (with different structures) led me to use several different types of verbs that vary primarily with respect to how they assign thematic roles to their subject. Eight different types of verbs were used, leading to variation in the structure of the sentence and the thematic role the verbs assigned to the subject nouns (Levin, 1993 & Dabir-Moghaddam 1982 & 1997). The verb types and the thematic role of the subjects are explained below:

Group A - Unaccusative verbs

These are the noun + verb combined compound verbs explained in chapter 1 (introduction). The structure of the sentences of this group is “NP V”. In fact, the original transitive verb structure “NP_(subject-agent) NP_(object-patient) V” has lost its NP_(subject-agent). So, the NP_(object-patient) has taken the position of the subject (valency reduction). Perlmutter (1978) has characterized the unaccusative verb as the verbs that take an internal argument but no external argument. Levin (1993:3) believes that the “D-structure” of

unaccusative verbs and passive verbs are the same as they have no external argument but a direct internal argument. Levin (1993) explains that the verbs in the reduced valency structure are unaccusative and the subject of the sentence is in fact the underlying object with patient thematic role. The example below shows a transitive structure (a) and its related unaccusative structure (b).

(3.4) a. Niki tæ nab-ha ra gere zæ d
 Niki rope-PI OM knot strike.Past.3SG
 'Niki knotted the ropes'

b. tæ nab-ha gere xord-æn
 rope-PI knot collide.Past-3PL
 Lit., 'the ropes knotted.'
 'the ropes became knotted.'

So, the target sentences of this judgment task included 14 sentences with unaccusative structure in four conditions (past vs. present and singular vs. plural). These verbs are classified as group A.

(3.5) a. tæ nab-ha gere mi-xor-e /mi- xor-æn
 rope-PI knot IND-collide-3SG /IND-collide-3PL
 Lit., 'the ropes knot(s).'

'the ropes become knotted.'

- b. (tænab-ha gere xord /xord-æn
 rope-PI knot collide.Past.3PL /collide.Past-3PL
 Lit., 'the ropes knotted.'
 'the ropes became knotted.'

Group B - Entity-specific inchoative verbs

These are the adverb + verb or noun + verb combined compound verbs explained in Chapter 1. Levin (1993:246) classifies these verbs as “verbs of entity-specific change of state”. This group includes very few verbs that describe changes that are not caused by an agent and “cannot be directly caused”. The changes “are inherent to the entities that undergo them” (e.g. “silver and some other metals tarnish, flower and plants wilt, and so on”). The thematic role of the subject is theme. The list of the 14 verbs used in this group is: *sprout, flower, bud (produce leaf), grow, subside, rise, swell, scab over, blister, rust, blossom, bud, mold, and take root*. These verbs are inchoative verbs which convey entity-specific changes of state. In this research, they are referred to as “entity-specific inchoative verbs”. Below are a set of examples in four conditions:

- (3.6) a. *lubiya-ha jævane mi-zæn-e /mi-zæn-æn*
bean-PI sprout IND-strike-3SG /IND-strike-3PL
 Lit., 'the beans sprout(s).'

- b. *lubiya-ha jævane zæd /zæd-æn*
bean-PI sprout strike.past.3SG /strike.past-3PL
 'the beans sprouted.'

Group C - Verbs of emission

These are the noun + combined compound verbs explained in Chapter 1. According to Levin (1993:233) these verbs “describe intrinsic properties of their subjects” so they “resemble the verbs of entity-specific modes of being”. The subjects of the verbs are inanimate and the verbs can be classified in different categories. The verbs of emission used in this experiment were 1) verbs of light emission (e.g. *light, flicker, gleam, spark, and flash*) 2) verbs of sound emission (e.g. *rustle, jingle, moan, buzz, make noise, and rattle*) 3) verbs of substance emission (e.g. *bubble, gush, and ooze*). The subjects for these verb have a theme role.

(3.7) a. pænjære-ha tæq tæq mi-kon-e /mi-kon-æn
 window-pl rattling IND-do-3SG /IND-do-3PL
 Lit., ‘the windows rattle(s).’
 ‘the windows rattle’

 b. pænjære-ha tæq tæq kærd /kærd-æn
 window-pl rattling do.Past.3SG /do.Past-3PL
 ‘the windows rattled’

Group D - Verbs of instrument

These are the Adverb + verb or noun + verb combined compound verbs explained in chapter 1 (introduction). The structure of the sentences of this group is “NP V”. The NP subject has the instrument thematic role and the verb is intransitive. In fact, the original (in)transitive verb structure “NP_(subject-agent) NP_(object-patient) NP_(oblique-instrument) V” has lost its NP_(subject-agent) and NP_(object-patient). So, the NP_(oblique-instrument) has taken the position of the subject (valency reduction). Referring to other studies, Levin (1993:274)

refers to this NP instrument subject as “intermediary instrument” and distinguishes it from “enabling instrument” which cannot be promoted to subject position. Whether an instrument NP can promote to subject position or not depends on the verb and the instrument. The first example below has an “enabling instrument” and cannot be promoted to subject position while the second one is “intermediary instrument” and can be promoted.

(3.8) a. Niki nushabe ro ba nei xord
 Niki soda OM with straw drank.3SG
 ‘Niki drank the soda with the straw’

b. *nei nushabe ro xord
 Straw soda OM drank.3SG
 *The straw drank the soda.

(3.9) a. Niki xæbær ro ba bolændgu-ha elam kærd
 Niki news OM with loudspeaker-PI announce did.3SG
 ‘Niki announced the news with the loudspeakers’

b. bolændgu-ha xæbær ro elam kærd-æn
 loudspeakers news OM announced
 ‘the loudspeakers announced the news’

The target sentences included 14 sentences of this group (group D). They are intransitive sentences with intermediary instrument as subject of the sentence (again in

four conditions). These verbs are intransitive with instrument subjects. In this dissertation, they are referred to as “verbs of instruments”. Below is a set of example:

(3.10) a. *helikupter-ha* *chærx* *mi-zæn-e* /*mi-zæn-æn*
 helicopter-pl *rotating* *IND-strike-3SG* /*IND-strike-3PL*

Lit., ‘the helicopters rotate(s).’

‘the helicopters rotate.’

b. *helikupter-ha* *chærx* *zæd* /*zæd-æn*
 helicopter-pl *rotating* *strike.Past-3SG* /*strike.Past-3PL*

‘the helicopters rotated.’

Group E - Verbs of agency

These are the noun + verb combined compound verbs explained in Chapter 1. Because of the nature of the actions, the verbs of this group require animate subjects with agent thematic role. Normally, inanimate subjects cannot perform these verbs unless in the hypothetical environment such as cartoons and fiction stories. These type of sentences were tested to investigate whether the mismatched form of the verb is used in case the subjects are used metaphorically and personified as human being doing human actions. These verbs are referred to as “verbs of agency” in this project.

(3.11) a. *ætr-ha* *gerye* *mi-kon-e* /*mi-kon-æn*
 perfume-Pl *cry* *IND-do-3SG* /*IND-do-3PL*

Lit., ‘the perfumes cry/cries.’

‘the perfumes cry.’

- b. *ætr-ha* *gerye* *kærd* /*kærd-æn*
 perfume-PI *cry* *did.3SG* /*did-3PL*
 'the perfumes cried.'

Group F - Passive verbs

The structure of the passive sentences is NP_(patient) + past participle + passive auxiliary (as explained in Chapter 1). The subject has patient thematic role. The verb is transitive, the original agent subject is deleted and the object has been promoted to subject position keeping its patient role. The passive auxiliary is /shodæn/, 'to become'. Below is a set of target sentence in four conditions:

- (3.12) a. *golabi-ha* *xorde* *mi-sh-e* /*mi-sh-æn*
 pear-PI *eaten* *IND-become-3SG* /*IND-become-3PI*
 Lit., 'the pears is/are eaten.'
 'the pears are eaten'

- b. *golabi-ha* *xorde* *shod* /*shod-æn*
 pear-PI *eaten* *became.3SG* /*became-3PI*
 Lit., 'the pears is/are eaten.'
 'the pears were eaten'

Group G - Stative auxiliary "to be"

As explained in Chapter 1, in combined compound verbs (Adjective + Auxiliary), an adjective is combined with the stative auxiliary /budæn/, 'to be'. In the sentences of this experiment, the present form of the copula "be" is realized as a clitic inflected for number and person (clitic /-e/, 'be.present.3SG and clitic /æn/, 'be.present.3PL') that

attaches to the predicate adjective. And the past form of the copula “be” is realized as either /bud/ (be.past.3SG) or /bud-æn/ (‘be.past-3PL). The thematic role of the subject could be characterized as none (not patient, not agent). Below is a set of target sentence in four conditions:

(3.13) a. miz-ha chubi -ye /-yæn
 table-Pl wooden be.3SG /be.3PL

Lit., ‘the tables is/are wooden.’

‘the tables are wooden’

b. miz-ha chubi bud /bud-æn
 table-Pl wooden be.Past.3SG /be.Past.3SG

Lit., ‘the tables was/were wooden.’

‘the tables were wooden’

Group H - Inchoative auxiliary “to become”

As was explained in Chapter 1, under combined compound verbs (Adjective + Auxiliary), an adjective is combined with the inchoative auxiliary /shodæn/, ‘to become’. Levin (1993:244-245) provides a long list of this kind of verbs. This group of sentences indicates a “change of state” in the subject. The thematic role of the subject is Patient. Below is an example of a target sentence in 4 versions:

(3.14) a. ræng-ha xoshk mi-sh-e /mi-sh-æn
 paint-pl dry IND-become.3SG /IND-become-3PL

Lit., ‘the paints become(s) dry.’

‘the paints dry.’

- b. ræng-ha xoshk shod /shod-æn
 paint-pl dry became.3PL /became-3PL
 Lit., ‘the paints became dry.’
 ‘the paints dried.’

This group is similar to group B, as both of them include change of state. But they are classified in separate groups as the change of state in this group is not inherited and not limited to the subject nouns. Also, they have different structure from the sentences in group (B). The structure of this group includes: subject + adjective + inchoative auxiliary /shodæn/, ‘become’ while the structure of group (b) includes subject + noun/adverb + verb.

The distracter sentences were a set of 80 sentences with different structures in two conditions/lists (past and present). The filler preambles included different kinds of structures. They consisted of a singular or plural (in)animate subject noun, optional singular/plural (in)animate direct/indirect object noun, the direct object marker /ra/ (if there was direct object), and the nonverbal component of a (in)transitive combined compound.

Using a Latin square design, the target sentences were divided into four compatible experimental lists (two lists in past and two in present tense). In each list, there were 112 target sentences (56 sentences with plural verb and 56 sentences with singular verb). There were 14 sentences of each verb type group. So, manipulating the Tense (present vs. past) and Number of the verb (singular vs. plural), the target items included 4 types of sentences (for each of the sentences in each group):

Singular present tense verb

Singular past tense verb

Plural present tense verb

Plural past tense verb

The eighty filler preambles were the same but the tense of the verbs was present or past. The past vs. present tense filler sentences were added to the lists of past vs. present tense target sentences so that the participants saw only present or past sentences in a single list. The order of the trials was arranged pseudo-randomly so that there were no subsequent target sentences with the same condition. Each list was read and judged by fourteen participants.

A list of the target and filler items in gloss and in Persian language along with the related condition are available in Appendices A at the end of the dissertation. Since understanding the literal meaning (the third line of the gloss) could be difficult for non-native speakers of Persian, an English grammatical equivalent of the complete sentence was added in the fourth line.

Procedure

A questionnaire methodology was used. Participants were first asked to read and sign a consent form for voluntarily participation in the experiment. The task started with a training section that included instructions and four practice trials. When the participants showed their readiness, the real experiment began. In order to test the effect of tense, the experiment was done in two sections (with two compatible lists). In each section, the participants received a list of the complete sentences (56 target and 40 filler items). In one of the sections, the tense of the list of sentences was present while in the other section the list of sentences was past. There was no adverb of time in the sentences, and so participants were told to imagine that all the events of the sentences happened the day before (past) while the event of the other list happened on

the same day (present). In both of the lists, half of the target sentences had singular verbs and the other half had plural verbs. So, half of the participants read and completed the list (A) with the past tense verbs and the list (B) with the present tense verbs and vice versa.

As noted above, participants did two things with each sentence. First, they circled /qabel-e qæbul/ (“acceptable”), or /qeir-e qabel-e qæbul/ (“unacceptable”). Next, they wrote K (/konande/, ‘doer’), M (/mored-e æmæ/, acted on), or H (/hichkodam/, ‘none’) on a line next to the sentence. The entire session, including all written materials and conversation, was conducted in Persian.

Design and Data Analysis

Acceptability

For the first goal of the experiment (acceptability), the participants’ responses were entered into an Excel spreadsheet, coded zero or one based on whether the participants accepted (0) or rejected (1) the sentence. Recall that the question for this experiment is whether there was 1) an effect of Verb Tense (present vs. past) and 2) the effect of Verb Type in the preference for optional subject-verb agreement.

The dependent variable was the proportion of rejected mismatched (singular) verbs out of all items and there were two independent, within-subject factors: verb tense (with two levels, present and past) and verb type (with eight levels, A-H listed above). Sets of by-participants (F1) and by-items (F2) Repeated Measures ANOVAs with the two-level factor Verb Tense and eight-level factor Verb Type performed. In addition, planned paired-sample t-tests were performed. An alpha level of .05 was used for all statistical tests.

Role interpretation

For the second goal of the experiment (role interpretation), the participants' responses were entered into an Excel spreadsheet, coded zero or one based on the "doer" or "acted on" thematic roles that the participants perceived for the inanimate plural subject nouns of the target sentences. The participants' "none" responses (not "doer" or "acted on" role) were ignored.

Recall that the question for this experiment is whether there was 1) an effect of Verb Tense (present vs. past) and 2) an effect of Verb Type, and 3) an effect of Verb Number in the participants' interpretation of the role of the inanimate plural subject noun. The dependent variable was the proportion of "acted on" perceived role for the subject nouns out of all the "acted on" and "doer" interpretations. The records of "none" interpretation were ignored, because the focus of the study was on the "agent like" and "patient like" thematic roles.

So, there were three independent, within-subject factors: verb tense (with two levels, present and past) and verb type (with eight levels, A-H listed above), and verb number (with two levels, singular and plural). Sets of by-participants (F1) and by-items (F2) Repeated Measures ANOVAs with the two-level factor Verb Tense, eight-level factor Verb Type, and two level factor Verb Number were performed. In addition, planned paired-sample t-tests were performed. An alpha level of .05 was used for all statistical tests.

One participant's data needed to be excluded from analysis because the participant was using formal language rather than informal spoken Persian. The remaining 28 participants' data was used in the analysis.

Questions of the Experiment

Acceptability

(1) Does the tense of the verb (present vs. past) have any effect in the comprehension of subject-verb agreement? More specifically, does the present vs. past form of the verb cause Persian native speakers to accept grammatical number mismatches? (2) Does the type of the verb (type A-H above) have any effect on the comprehension of subject-verb agreement? More specifically, does the type of the verb cause Persian native speakers to accept the mismatched form of the verb (singular) more often with inanimate plural subjects?

Role interpretation

(1) Does the tense of the verb (present vs. past) have any effect in the comprehenders' perceived thematic role of the subject nouns? More specifically, does the present vs. past tense of the verb cause Persian native speakers to interpret different roles for the inanimate plural subject nouns in sentences with different verb types (type A-H) and with matched (plural) or mismatched (singular) verbs? (2) Does the type of the verb (type A-H above) have any effect on the comprehenders' perceived thematic role of the subject nouns? More specifically, does the type of the verb cause Persian native speakers to interpret different roles for the inanimate plural subject nouns in sentences with present or past tense and matched (plural) or mismatched (singular) verbs? (3) Does the number feature of the verb (singular vs. plural) have any effect on the comprehenders' perceived thematic role of the subject nouns? More specifically, does the singularity or plurality of the verb cause Persian native speakers to interpret different roles for the inanimate plural subject nouns in sentences with different verb types (type A-H) in present or past tense?

Predictions

Acceptability

Regarding the effect of Verb Tense, based on Lotfi (2006)'s suggestion and an informal pilot study, I predicted that more mismatched (singular) form of the verbs would be accepted in the sentences with past tense compared to sentences with present tense. For the effect of verb type, participants were predicted to accept more singular verbs in A (unaccusative verbs), F(passive verbs), G (stative auxiliary verb), H (inchoative auxiliary verb) than in B (entity-specific inchoative verbs), C (Verbs of emission), D (verbs of instruments), and E (verbs of agency). As the subjects in groups A, F, and H receive patient thematic role (and group G with no thematic role) from their related verbs while the subjects in B, C, D and E do not.

Role interpretation

For the effect of Verb Tense, the participants were predicted to interpret more "acted-on" role for the inanimate subject nouns in sentences with past tense verbs rather than present. For the effect of number feature of the verb, the participants were predicted to interpret more "acted-on" role for the inanimate subject nouns in sentences with singular verbs rather than plural, as the singularity of the verb may imply that the subject is acted on. For the effect of verb type, participants were predicted to interpret more "acted-on" role for the inanimate subject nouns in sentences with A (unaccusative verbs), F(passive verbs), H (inchoative auxiliary verb) than in G (stative auxiliary verb), B (entity-specific inchoative verbs), C (verbs of emission), D (verbs of instruments), and E (verbs of agency). As the subjects in groups A, F, and H receive patient or "patient like" thematic role from their related verbs while the subjects in G, B, C, D and E do not.

Results

Result of acceptability.

The participants' judgment on the acceptability of sentences were entered into an Excel spreadsheet, coded "zero" for "accepted" sentences and "one" for "rejected" sentences. The results showed that virtually none of the sentences with plural verbs (either with past or present tense) were rejected (with a rejection rate of only 0.001). This means that the participants accepted target sentences with matched verbs (plural) belonging to any verb group with present tense or past tense. Next, I analyzed the rejection rates of sentences with mismatched verbs (singular) to test the effect of Verb Tense and Verb Type on the acceptability of the mismatched verbs.

There were two independent, within-subject factors: Verb Tense (with two levels, present vs. past) and Verb Type (with eight levels, groups A-H).

This analysis revealed a main effect of Verb Type ($F(7, 189)=353.047$, $MSE=0.024$, $P<0.01$). There was no effect of Verb Tense ($F_1=2.420$, $F_2=1.269$) or an interaction between Verb Type and Verb Tense ($F_1=1.217$, $F_2<1$). The results are reflected in Tables 3-1 and 3-2.

These results show that the Verb Type had a significant effect on the participants' acceptability of the mismatched form of the verb (singular). But neither Verb Tense nor the interaction between Verb Type and Verb Tense had an effect on the participants' acceptance of the mismatched form.

These results indicate that Verb Type (group A-H) was a significant factor in the acceptability of optional subject-verb agreement in Persian. Table 3-3 shows the mean proportion of the participants' judgment about the unacceptability of the singular form of the verb, broken down by verb type.

As Table 3-3 indicates, the participants showed a similar range of rejection rates for the mismatched verbs in unaccusative verbs (groups A, 0.04), entity-specific inchoative verbs (group B, 0.07), passive verbs (group F, 0.02), verb of stative auxiliary “to be” (groups G, 0.03), and inchoative auxiliary “to become” (H, 0.03). In all of these groups (A, B, F, G, H), the mean proportion of rejection of mismatched verbs is below 0.1. This means that participants accepted between 93% to 97% of the target sentences with inanimate plural subject nouns and singular verbs. Considering the thematic role of the subject nouns in these types of the verbs; patient or patient like (patient for verb groups A, F, & H, theme for verb group B, and none for the verb group G), we may conclude that the Verb Type and the thematic role the verb assign to its subject has a crucial role in optional subject-verb agreement.

The rejection rates for mismatched verbs in “verbs of emission” (group C rejected 24%), “verbs of instrument” (group D rejected 80%), and “verbs of agency” (group E rejected 96%) are much higher than any other verb groups. This means that the participants accepted about 76% of the target sentences with inanimate plural subject nouns and singular verbs in group (C), 20% in group (D), and only 4% in group (E). Considering the thematic role the verb groups assign to their subject nouns, we may conclude that the Verb Type and the thematic role the verb assign to its subject has an important role in the optional subject-verb agreement. The verbs of agency assign “agent role”, the verbs of instrument assign “intermediary instrument”. It is difficult to say what thematic role the verbs of emission assign to their subject noun because the subjects are inanimate nouns and do not have voluntary control on the action. According to Levin (1993:233), the emission verbs “describe intrinsic properties of their

subjects” so they “resemble the verbs of entity-specific modes of being”. The thematic role of this group of the verb may be considered “Agent like” although they are different from the agent verb (group E).

In fact, the unacceptance rate for mismatched verbs in “verbs of agency” (group E) is .04, meaning that participants did not accept the mismatched (singular) form of the verb for the animate verbs (e.g. cry, dance, walk). In fact, Persian comprehenders were expected to reject all the sentences with the mismatched verbs. This small acceptance proportion (0.04) is because of the stereotypical meaning of one of the target sentences explained below:

(3.15) baqlæva-ha cheshkæk mi-zæn-e /mi-zæn-æn
 baklavas wink IND-strike-3SG /IND-strike-3PL
 Lit., ‘the baklavas wink(s)’
 ‘the baklavas wink.’

The verb /cheshkæk zædæn/, ‘to wink’ has a connotative meaning of “being persuasive” in Persian and is commonly used with food conveying the meaning that “the food, fruit, and sweet are delicious/ persuasive to eat”. So, this verb is not bound to “verbs of agency” because it is used (with implied meaning) with inanimate noun. And, it is for this reason that some of the participants accepted the mismatched form of the verb “wink” with inanimate plural subject nouns.

Table 3-4 shows the pairwise comparison of the mean proportion of the participants’ judgment about the acceptability of the singular form of the verb. As the comparison of the mean proportion of acceptability shows, the verbs in groups (A, B, F, G, and H) do not show mean difference with each other while they show mean difference with group (C, D, and E). But the verbs in groups (C, D, and E) show mean

difference with each other and with other verbs in groups (A, B, F, G, and H). The calculation is based on estimated marginal means and adjustment to multiple comparisons: Bonferroni. The Mean difference is significant at the 0.05 level.

Result of role interpretation.

The participants' interpretations about the role of the subject nouns of the target sentences were entered into an Excel spreadsheet, coded "one" for "acted-on" roles and "zero" for "do-er" or "neither of them". So, we will be examining the percentage of "acted-on" or *patient* interpretations. There were three independent, within-subject factors: Verb Tense (with two levels, present vs. past), Verb Number (with two levels, singular vs. plural), and Verb Type (with eight levels, groups A-H). The participants' interpretations for the verbs of group G (stative auxiliary "be") were deleted from the analysis, as most of the participants interpreted the subject nouns as "none" means neither "do-er" nor "acted-on". In fact, the verbs of this group are stative and the subjects do not have agent or patient role. So, there remained only seven verb types (verb groups: A, B, C, D, E, F, & H) explained in the "materials" section.

The analysis revealed a main effect of Verb Type ($F(6, 126)=549.120$, $MSE=0.033$, $P<0.01$) and main effect of Verb Number ($F(1, 21)=4.745$, $MSE= 0.26$, $P<0.05$; $F(1, 90)=4,523$, $MSE= 0.015$, $P<0.05$). But, the results did not show an effect of Verb Tense, by participants ($F(1)= 2.839$), although it did reach significance by items ($F(1, 90)=6.535$, $MSE= 0.012$, $P<0.05$).

There was no interaction between Verb Type and Verb Tense by participants ($F(6, 90)=2,257$, $MSE=0.012$, $P< 0.05$). There was no interaction between Verb Type and Verb Number ($F < 1$, $F(2, 90) < 1$), no interaction between Verb Tense and Verb Number ($F < 1$, $F(2, 90) < 1$), and no interaction

among Verb Type, Verb Tense, and Verb Number ($F < 1$, $F_2 < 1$). The results are shown in Tables 3-5 and 3-6.

These results show that Verb Type (group A, B, C, D, E, F, & H) had a significant effect on the participants' interpretation of the thematic role of the subject nouns of the sentences. Table 3-7 shows the mean proportion of the participants' interpretations of the patient thematic role of the subject nouns of the sentences with the verbs of each group.

As Table 3-7 indicates, for the subject nouns with unaccusative verbs (verb group A), participants had a patient-interpretation rate 0.67 while the inchoative verbs (verb group B) elicited only a 0.18 rate. These results are interesting, as they show the participants' different perceived roles for the subjects of these two verb groups. The participants' patient-interpretation rates for the verbs of emission (group C) and verbs of instrument (group D) were both similarly low (0.05 & 0.01), and for the subjects of verbs of agency (group E) the proportion is zero. This means that the participants did not perceive the subject nouns of verbs of agency to have an "acted-on" role, and is consistent with the linguistic agent role of the subject nouns of the sentences of that group.

Finally, the participants showed a similar rate of patient-interpretation for the passive verbs (group F, 0.99) and inchoative auxiliary "to become" (H, 0.97). Grammatically, the subjects of sentences with these two verb groups have acted-on (patient) role. These figures show that the participants' ratings substantially agree with linguistic analyses and intuitions about these verbs.

Table 3-8 shows the pairwise comparison of the mean proportion of the participants' acted-on interpretation of the role of the subject nouns for each verb group. As the comparison of the mean proportion of acted-on role shows, the verbs in groups (F & H) do not show mean difference with each other while they show mean difference with the rest of the groups. The verb groups (C & D) and (D & E) show similarities with each other and differences with the rest of the groups. The verb groups (A & B) do not show any similarity with each other and with any other verb group. The calculation is based on estimated marginal means and adjustment to multiple comparisons (Bonferroni). The mean difference is significant at the 0.05 level.

The results showed that the Verb Tense (present vs. past) did not have a significant effect on the participants' interpretation of the thematic role of the subject nouns of the sentence. Table 3-9 shows the mean proportion of the participants' acted-on role interpretations for the subject nouns of the sentences with present and past tense verbs.

Table 3-10 shows the pairwise comparison of the patient role interpretation in sentences with present and past tense verbs. This table shows that the interpreted thematic roles in the sentences with present or past tense verbs were not significantly different. This means that the present or past tense verb did not cause the participants to consider the subject nouns as acted-on.

The results showed a significant effect of Verb Number in the participants' interpretation of the thematic role of the subject nouns. Table 3-11 shows that the participants perceived more patient role for the subject nouns of the sentences in which the verbs were mismatched (singular) rather than matched (plural). This means that the

mismatched (singular) form of the verbs caused the participants to interpret the subject nouns more as acted-on.

Table 3-12 provides the pairwise comparison of the patient interpretation in sentences with singular vs. plural verbs. This table shows that the proportions of the interpreted patient roles in sentences with singular or plural verbs were different.

Finally, Table 3-13 shows the proportion of patient interpretation for the inanimate plural subject nouns in sentences with different verb groups and singular or plural verbs.

Discussion

This experiment had two sets of goals. The acceptability goal was designed to experimentally confirm and quantify the existence of optional subject-verb agreement in Persian and to test the effect of Verb Tense and Verb Type on the acceptability of optional agreement by Persian comprehenders.

The Role Interpretation goal was designed to examine the relationship between the acceptability of a mismatched verb form with the perceived thematic role of the subject. For this purpose, I analyzed the participants' perceived role of the subject nouns of the sentences with three factors; the effect of Verb Tense, the effect of Verb Type, and the effect of Verb Number in the participants' judgment for the role of the subject noun.

In fact, the materials of this experiment were the complete sentence versions of the target preambles used in Experiment 2, and so this experiment also serves to confirm the acceptability of those preambles in Experiment 2.

Thus, in this experiment, participants read two lists of complete sentences and judged whether each sentence was acceptable in Persian or not. Also, they provided a

response about whether they judged the subject of the sentence as a "do-er", something that was "acted-on", or neither of these.

Effect of verb type. The results of this study showed that Verb Type had a significant effect on the acceptability of mismatched verbs. The participants accepted more than 90% of the mismatched verbs in groups (A, B, F, G, and H) with inanimate plural subject nouns but they accepted 76% of the target sentences with verbs in group (C), 20% with group (D), and only 4% with group (E). This means that the participants' judgments for the acceptability of the target sentences with the Verb Types (A, B, F, G, and H) were almost the same but they were different for the Verb Types (C, D, and E). Also, the verb types (C, D, and E) were different from each other. Considering the thematic role that different verb types assign to their subject nouns, we may conclude that the Verb Type and the thematic role that the verb assigns to its subject have an important role in the optional subject-verb agreement.

This result is consistent with the result of the effect of Verb type in Role interpretation which showed the significant effect of verb type. More specifically the participants' proportion of "acted-on" interpretation role for each verb type showed that the participants perceived almost the same portion of the acted-on thematic role for the subjects of verb groups (F & H). The verb groups (C, D) are similar and show very little proportion of acted-on role. Group (D and E) show almost no acted-on proportion and are similar. But the effect of verb in this goal is somehow different from the acceptability part as the proportion of acted-on for the verb type (group A) is different from verb types (F & H), while it is considerably different from verb type (group B) and all the other verb

types (the verb groups A, B, F, H showed similar range of unacceptability of mismatched verb).

Considering the similarities and differences of the result of rate of unacceptability and proportions of acted-on role for the subject noun, the verb groups may be classified in the following categories: (1) verbs type A with “patient like” subjects, (2) verb types B, C & D with agent like subjects, (3) verb type E with agent subjects, and (4) verb types F & H with patient subject.

Effect of verb tense. Neither Verb Tense nor the interaction of Verb Tense and Verb Type had any effective role in the acceptability of the mismatched verbs. This shows that the participants did not show any difference in accepting the past and present tense target sentences with inanimate plural subject noun and mismatched form of the verb (singular). Verb tense did not show any effect in the interpretation of the thematic role of the subject noun either.

Effect of verb number. Verb Number had a significant effect on the participants’ acceptance of the sentences; the participants accepted all the sentences with the matched (plural verbs) but they accepted different proportions of the sentences with mismatched verbs depending on the types of the verb. Verb Number also showed a significant effect on the participants’ interpretation of the thematic role of the subject nouns. They perceived more acted-on role for the inanimate plural subject nouns when the verbs were singular rather than plural.

Crucially, the effect of Verb Type and the thematic role it assigns to its subject noun appear to be related to the semantic meaning rather than grammatical meaning. This implies the effect of semantic factor; the factor other than purely syntactic role. This

fact that the Verb Type and the thematic role it gives to the subject noun could influence agreement is most consistent with a Maximalist view and constraint-based account in which additional, non-syntactic factors may influence agreement.

Conclusion

As predicted, the results suggest the effect of Verb Type in the acceptability of sentences with mismatched verbs. Also, the Verb Type was a significant factor in interpreting the thematic role of the subject nouns. The analysis did not show any effect of Verb Tense nor the interaction of Verb Type and Verb Tense in rejecting the sentences with mismatched verbs, nor did the verb tense showed to be a significant factor in interpretation of the role of the subject nouns.

Both acceptability and role interpretation showed the effect of Verb Number. The participants accepted all the sentences with matched verbs but accepted different proportions of mismatched verbs for verbs of different group types. For role Interpretation, the participants interpreted more acted-on roles for subjects of the sentences with mismatched verbs rather than matched ones. This finding is very interesting as it shows that the participants are unknowingly more likely to interpret patient thematic roles for subject nouns if the verb of the sentence is singular.

The effect of verb type in rejecting the sentences with mismatched form of the verb and interpreting the thematic role the verb assigns to its subject are semantic factors and consistent with the maximalist, constraint-based account which argues that in addition to syntactic information other factors including semantic factors influence agreement during grammatical encoding and that the agreement is not governed solely by syntactic information.

The results of Role interpretation part showed the significant effect of verb type; as the participants interpret different portions of acted-on roles for the subject nouns with different verb groups. Based on the participants' judgments, the verb groups were classified into verb types which give patient, patient-like, agent, and agent-like roles to their subject nouns.

Table 3-1. Acceptability, test of within subject effects (per participants)

Source	df	Mean Square	F	Sig.
Verb type	7	8.300	353.047	.000
Error (verbtype)	189	.024		
Tense	1	.045	2.420	.131
Error (tense)	27	.019		
verbtype * tense	7	.020	1.217	.295
Error (verbtype*tense)	189	.017		

Table 3-2. Acceptability, test of within subject effects (per items)

Source	Df	Mean Square	F	Sig.
Tense	1	.018	1.269	.263
tense * verb type	7	.007	.499	.833
Error(tense)	104	.014		

Table 3-3. Mean proportion of unacceptability of each Verb Type

Verb Type	Mean	Std. Error
A	.039	.014
B	.071	.020
C	.244	.041
D	.801	.035
E	.964	.011
F	.016	.009
G	.027	.013
H	.031	.017

Table 3-4. Pairwise comparison of the mean proportion of unacceptability of mismatched verb for each Verb Type

(I) verb type	(J) verb type	Mean Difference (I-J)	Std. Error
A	B	-.033	.020
	C	-.205*	.041
	D	-.762*	.039
	E	-.926*	.016
	F	.022	.013
	G	.012	.016
	H	.007	.018
	B	A	.033	.020
C		-.173*	.042
D		-.729*	.033
E		-.893*	.019
F		.055	.020
G		.045	.019
H		.040	.021
C		A	.205*	.041
	B	.173*	.042
	D	-.557*	.047
	E	-.720*	.043
	F	.228*	.040
	G	.217*	.040
	H	.213*	.036
	D	A	.762*	.039
B		.729*	.033
C		.557*	.047
E		-.164*	.035
F		.784*	.034
G		.774*	.032
H		.769*	.033
E		A	.926*	.016
	B	.893*	.019
	C	.720*	.043
	D	.164*	.035
	F	.948*	.013
	G	.938*	.018
	H	.933*	.018

Based on estimated marginal means

a. Adjustment for multiple comparisons: Benferroni

*. The mean difference is significant at the .05 level

Table 3-4. Continued

(I) verb type	(J) verb type	Mean Difference (I-J)	Std. Error
F	A	-.022	.013
	B	-.055	.020
	C	-.228*	.040
	D	-.784*	.034
	E	-.948*	.013
	G	-.010	.013
	H	-.015	.013
	G	A	-.012	.016
B		-.045	.019
C		-.217*	.040
D		-.774*	.032
E		-.938*	.018
F		.010	.013
H		-.004	.016
H		A	-.007	.018
	B	-.040	.021
	C	-.213*	.036
	D	-.769*	.033
	E	-.933*	.018
	F	.015	.013
	G	.004	.016

Based on estimated marginal means

a. Adjustment for multiple comparisons: Benferroni

*. The mean difference is significant at the .05 level

Table 3-5. Role interpretation, test of within subject effects (per participant)

Source	df	Mean Square	F	Sig.
Verb type	6	18.016	549.120	.000
Error(verb type)	126	.033		
Verb Tense	1	.063	2.839	.107
Error(tense)	21	.022		
Number	1	.124	4.745	.041
Error(number)	21	.026		
Verb type * verb tense	6	.017	.682	.664
Error(verb type * verb tense)	126	.025		
Verb type * verb number	6	.009	.289	.941
Error(verb type * verb number)	126	.032		
Verb tense * verb number	1	.000	.004	.951
Error(verb tense * verb number)	21	.027		
verb type * verb tense * verb number	6	.015	.840	.541
Error(verb type*verb tense * verb number)	126	.018		

Table 3-6. Role interpretation, test of within subject effects (per items)

Source	Df	Mean Square	F	Sig.
Verb tense	1	.078	6.535	.012
Verb tense * verb type	6	.027	2.257	.045
Error(verb tense)	90	.012		
Verb number	1	.066	4.523	.036
Verb number * verb type	6	.008	.533	.782
Error(verb number)	90	.015		
Verb tense * verb number	1	.000	.028	.868
Verb tense * verb number * verb type	6	.013	.954	.461
Error(verb tense * verb number)	90	.014		

Table 3-7. Mean proportion of patient role interpretation for different Verb Type

Verb Type	Mean	Std. Error
A	0.686	.038
B	0.184	.033
C	0.046	.013
D	0.012	.007
E	0.000	.000
F	0.988	.007
G	---	---
H	0.966	.013

Table 3-8. Pairwise comparison of the mean proportion of acted-on interpretation of the subject nouns for each Verb Type

(I) verb type	(J) verb type	Mean Difference (I-J)	Std. Error	Sig. ^a
A	B	.502*	.042	.000
	C	.639*	.038	.000
	D	.673*	.036	.000
	E	.686*	.038	.000
	F	-.302*	.038	.000
	H	-.280*	.034	.000
B	A	-.502*	.042	.000
	C	.137*	.034	.012
	D	.171*	.033	.001
	E	.184*	.033	.000
	F	-.804*	.034	.000
	H	-.782*	.031	.000
C	A	-.639*	.038	.000
	B	-.137*	.034	.012
	D	.034	.016	.847
	E	.046*	.013	.048
	F	-.941*	.013	.000
	H	-.920*	.017	.000
D	A	-.673*	.036	.000
	B	-.171*	.033	.001
	C	-.034	.016	.847
	E	.012	.007	1.000
	F	-.975*	.012	.000
	H	-.954*	.016	.000
E	A	-.686*	.038	.000
	B	-.184*	.033	.000
	C	-.046*	.013	.048
	D	-.012	.007	1.000
	F	-.988*	.007	.000
	H	-.966*	.013	.000

Table 3-8. Continued

(I) verb type	(J) verb type	Mean Difference (I-J)	Std. Error	Sig. ^a
F	A	.302*	.038	.000
	B	.804*	.034	.000
	C	.941*	.013	.000
	D	.975*	.012	.000
	E	.988*	.007	.000
	H	.022	.013	1.000
H	A	.280*	.034	.000
	B	.782*	.031	.000
	C	.920*	.017	.000
	D	.954*	.016	.000
	E	.966*	.013	.000
	F	-.022	.013	1.000

Table 3-9. Mean proportion of patient role interpretation for different Verb Tense

Tense	Mean	Std. Error
Present	.402	.012
Past	.422	.011

Table 3-10. Pairwise comparison of patient interpretation for different Verb Tense

(I) tense	(J) tense	Mean Difference (I-J)	Std. Error	Sig. ^a
present	past	-.020	.012	.107
Past	present	.020	.012	.107

Table 3-11. Mean proportion of patient interpretation for different verb number

Number	Mean	Std. Error
Plural	.397	.013
Singular	.426	.010

Table 3-12. Pairwise comparison of patient interpretation for different verb number

(I) number	(J) number	Mean Difference (I-J)	Std. Error	Sig. ^a
Plural	Singulat	-.028*	.013	.041
singular	Plural	.028*	.013	.041

Table 3-13. Patient interpretation for subjects (interaction of verb tense and verb number)

verb type	number	Mean	Std. Error
A	PL	.657	.051
	SG	.714	.054
B	PL	.163	.043
	SG	.205	.040
C	PL	.036	.017
	SG	.057	.019
D	PL	.008	.008
	SG	.017	.009
E	PL	.000	.000
	SG	.000	.000
F	PL	.975	.014
	SG	1.000	.000
H	PL	.943	.025
	SG	.989	.011

CHAPTER 4 EXPERIMENT 2- EFFECT OF VERB TYPE AND TENSE

Overview

As discussed in Chapters 1 and 3, some Persian grammarians and linguists have suggested that different kinds of verbs may have an impact on optional subject verb number agreement in Persian (Lotfi, 2006; Saasat, 1996). Also, Lotfi (2006) argued that Persian speakers prefer to use plural verbs when the tense of the sentence is future and not past.

The goal of this experiment was thus to investigate the effect of verb type and verb tense in the production of optional subject-verb agreement in Persian. More specifically, this experiment was designed to test whether the tense of the sentence (present vs. past) causes speakers to produce a higher proportion of mismatched (i.e. singular) verbs or not. In the same way, the effect of verb type was tested to investigate whether participants produce a higher proportion of mismatched verbs with certain verb types compared to others.

It is worth repeating from Chapter 3 that the materials of this experiment were tested in the judgment task reported in Chapter 3, in which the participants accepted all the target sentences with plural verbs either past or present and belonging to any verb group. But, with mismatched verbs, participants accepted different proportions of sentences depending on the verb type, with verbs interpreted as assigning more patient-like roles to their subjects have the highest rates of acceptability. Participants did not show any acceptability different for past vs. present tense.

Now, in this completion task, participants were provided with two series of preambles (incomplete versions of the target sentences in Chapter 3) and they were

instructed to repeat each preamble and then complete the sentence with their own verbs in present or past tense.

Method

Participants

The participants were forty-six Iranian native speakers of Persian (29 males and 17 females) between 22- 43 years old (mean 28 years). They were members of the University of Florida community, and participated in the study voluntarily. The participants were late learners of English who had learned this language for the purpose of education and did not have significant knowledge of any other language. All participants had normal or corrected vision and did not have any cognitive or neurological impairment. The participants of this experiment also participated in Experiment 5 (object attraction, cf. Chapter 7), which was conducted at the same time.

Materials

The materials of this experiment were almost the same as the materials of Experiment 1 (Chapter 3). There was only one difference: the sentences in Experiment 1 were complete sentences (consisting of inanimate plural subject noun + nonverbal + verbal part of the combined compound verbs) while the materials of this experiment were preambles consisting of [inanimate plural subject noun + nonverbal part of the compound verbs]. The reason for the difference is that in the judgment task the participants were supposed to read the sentences and judge whether they were acceptable sentences, but in this completion task they were supposed to repeat the preamble and then complete the sentences by adding the verbal part of the compound verb.

The materials for this experiment were thus one hundred and twelve target preambles. The preambles were classified into the same eight groups as in the judgment task: (A) unaccusative verbs, (B) Entity-specific inchoative verbs, (C) verbs of emission, (D) verbs of instrument, (E) verbs of agency, (F) passive verbs, (G) stative auxiliary “to be”, and (H) inchoative auxiliary “to become”. The verbs of each group were coded in order to test the effect of the verb type in the production of mismatched form (singular) verb. There were 14 target preambles in each verb group. Table 4-1 shows a sample preamble of each verb type along with the possible responses in present/past tense with singular/plural verbs. For the English equivalent (fourth line), only past plural is provided.

The distracter materials were also the same as those in Experiment 1. There was only one difference: the distracter sentences in Experiment 1’s judgment task were complete sentences, while the distracter materials in this experiment were preambles with similar structure as the critical items.

The target sentences were divided into two compatible lists (one list of preambles to be completed with past tense verbs and the other with present tense). In each list, there were fifty-six target preambles (seven of each condition) and forty filler preambles. Participants saw both of the lists and completed the sentences of one list with present tense and the other list with past tense verbs (in this way the participants read and complete all the sentences). The order of the trials was arranged pseudo-randomly so that there were no adjacent target sentences within the same condition. Each list was read by twenty-two participants.

A list of the target and filler items in gloss and in Persian are available in Appendix B. Because understanding the literal meaning (the third line of the gloss) could be difficult for non-native speakers of Persian, an English grammatical equivalent of the complete sentence was added in the fourth line.

Procedure

Participants were tested individually and gave informed consent before participating. They sat in front of an Apple Mac computer equipped with a microphone running Psyscope X. The experiment started with instructions and four practice trials. When participants indicated they were ready, the experiment began.

As mentioned above, in order to test the effect of Verb Tense, the participants were instructed to imagine that the events of the preambles in one of the lists had happened the day before but for the other list the events happened on the same day. In this way, they automatically only used past tense verbs in one list and present tense verbs in another list. List A and B were used alternatively for present or past tense so half of the participants repeated and completed the preambles of list A with past tense and list B with present tense and the other half did opposite. Also, in order to avoid an effect of order with the tenses, half of the participants did present tense first, then past. The other half of the participants did the opposite order. During a break between the two lists, all the participants participated in a different completion task (Experiment 5). Even with the additional task in-between, participants had a few minutes break between each list.

In each trial, the preamble appeared in black text at the center of the computer screen on a white background. The participants were instructed to repeat the preamble and then complete the sentence aloud. Then, they pushed any key to continue, which

caused a signal (++++++) to appear on the screen. The participants pressed a key again when they were ready to proceed to the next trial. After pressing the key, it would take one second until the next trial would appear. This would give enough time for me to record the participants' answers on an answer sheet. Throughout the experiment, each participant's voice was recorded on the computer in order to be able to check responses in any unclear cases. Following the approved IRB protocol, participants' voice files were deleted from the computer after the investigator recorded the participants' answers in the checklists.

Design and Data Analysis

The verbs produced by the participants were entered into an Excel spreadsheet, coded one or zero based on the singularity (1) or plurality (0) of the produced verbs, resulting in a proportion of singular verb (subject-mismatching) responses.

Recall that the question for this experiment is whether there are effects of Verb Type and Verb Tense in the production of subject-verb agreement. The dependent variable is the proportion of singular verbs out of all items. As already noted above, there were two independent, within-subject factors: Verb Type (with eight levels, (A) unaccusative verbs, (B) Entity-specific inchoative verbs, (C) verbs of emission, (D) verbs of instrument, (E) verbs of agency, (F) passive verbs, (G) stative auxiliary "to be", and (H) inchoative auxiliary "to become"), and Verb Tense (with two levels, Present vs. Past).

Sets of by-participants (F1) and by-items (F2) Repeated Measures ANOVAs with the eight-level factor Verb Type and two-level factor Verb Tense were performed. In addition, planned paired-sample *t*-tests were performed. An alpha level of .05 was used for all statistical tests. One participant's data was excluded from analysis because the

participant had difficulty performing the task in a timely fashion (she had been living in another state for two years before moving to Florida and had not had access to Iranian communities to use Persian). The data of another participant was also excluded because the participant was using formal language rather than informal spoken Persian. The remaining 44 participants' data were used in the analysis.

Predictions

Regarding the effect of tense, it was predicted that more mismatched (i.e. singular) verbs would be produced in sentences with past tense compared to sentences with present tense. For the effect of verb type, participants were predicted to produce more mismatched verbs in A, B, F, G and H (with patient/ patient like/ or no role subject) than in C (subject of emission verbs), D (intermediary instrument subject), or E (agent subject).

Results

The analysis revealed a main effect of Verb Type ($F(7, 301)=55,336$, $MSE=0.032$, $P<0.01$), a main effect of Verb Tense ($F(1, 43)=47,127$, $MSE=0.100$, $P<0.01$; $F(1, 104)=207,513$, $MSE=0.007$, $P<0.01$), and an interaction between Verb Type and Verb Tense ($F(7, 301)=9,018$, $MSE=0.025$, $P<0.01$; $F(7, 104)=10,081$, $MSE=0.007$, $P<0.01$;). The results are shown in Tables 4-2 and 4-3.

Table 4-4 shows the mean proportion of the participants' production of mismatched (singular) form of the verb in present and past tense sentences.

As Table 4-4 indicates, 17% of the produced sentences in the present tense and 33% of those in the past tense had mismatched verbs. This means that the participants

produced nearly double the number of mismatched verbs in the past tense sentences compared to the present tense sentences.

The mean proportion of the participants' production of the mismatched (singular) form of the verb for the verbs of each group (A, B, C, D, E, F, G, and H) are given in Table 4-5.

The mean proportion of participants' mismatched verb use is similar for verb groups (A) unaccusative verbs, (B) Entity-specific inchoative verbs, (F) passive verbs, (G) stative auxiliary "to be", and (H) inchoative auxiliary "to become" (between 0.32 to 0.38). This means that the participants produced mismatched verbs in 32% to 38% of sentences in those verb groups. Considering the thematic role of the subject nouns in these types of the verbs, (patient, patient like, or no role for stative verbs) we may conclude that Verb Type and the thematic role that the verb assigns to its subject have a significant role in optional subject-verb agreement.

However, the mean proportion of the participants' production of mismatched verbs is different for the other three verb groups: (C) verbs of emission (with 0.17), (D) verbs of instrument (with 0.06), and (E) verbs of agency (with 0.02). Considering the thematic role that the verbs in these groups assign to their subject nouns, we may conclude that the Verb Type and the thematic role that the verb assigns to its subject has an effect in optional subject-verb agreement. (The verbs of agency (E) assign "agent role", the verbs of instrument (D) assign "intermediary instrument". As mentioned in the previous chapter (Chapter 3), it is difficult to say what thematic role the verbs of emission (C) assign to their subject nouns because the subjects are inanimate nouns and do not have voluntary control on the action.)

In fact, the mean proportion of the production of mismatched verbs in “verbs of agency” (group E) is nearly zero (0.02) meaning there was almost no production of any mismatched verbs for the animate verbs (e.g. cry, dance, walk). This 0.02 production of the mismatched form of the verb is because of the stereotypical meaning of one of the target items, which was explained in Chapter 3.

Table 4-6 shows the proportion of the participants’ production of mismatched verbs, with the interaction of Verb Tense and Verb Type. The proportion of the mismatched verbs in each group was different for past vs. present tense. Generally, the proportion of singular verbs produced with the past tense is about twice that of the present tense. This interaction of verb type and tense was most clear in verb groups A (unaccusative verbs, 2.18), B (entity specific inchoative verbs, 2.07), D (verbs of instrument, 2.08), and G (stative auxiliary “to be”, 2.26), with group G having the biggest effect. The interaction of verb type and tense was smaller in verb groups C (verbs of emission, 1.59) , E (verbs of agency, 1.77) , F (passive verbs, 1.88) , and H (inchoative auxiliary “to become”, 1.82), with group C having the smallest effect. This suggests that the effect of tense is stronger in some verb groups such as stative auxiliary “to be” (groups G) and less effective in verbs of emission (group C), but it is not entirely clear why.

Discussion

In this study, the effects of Verb Type and Verb Tense in the production of optional subject-verb agreement were tested. The optionality of subject-verb number agreement of Persian (for inanimate plural subjects) and the use of compound verbs created exceptional conditions for testing the effect of Verb Type and the thematic role it assigns to the subject. All experimental materials were grammatical sentences and

there was no need to use elicitation of errors or the ambiguity of collective or distributive nouns. Further, the structure of compound verbs (consist of nonverbal + verbal part) in the target preambles provided the opportunity to give the nonverbal part of the verb in the preamble and ask the participants to complete the sentence with a verb. In this way, participants had no choice other than to complete sentences with the verbal part which was predicted. It is worth noting that the type of the verb and the thematic role it assigns to the subject noun is determined by the verbal part of the compound verb.

The results of this study show that Verb Tense had an important impact on the production of optional subject-verb agreement. The participants produced mismatched (singular) verbs in the past tense almost twice as much as they produced them in the present tense, as was predicted by Lotfi (2006). The experiments of this dissertation did not investigate the reason behind the effect of verb tense. Lotfi (2006: p137) has predicted that Persian speakers use more plural verbs in future sentences. He believes that “apparently, autonomy in action is more viable when the course of events has not come to an end yet”.

Also, we saw a significant effect of Verb Type in the production of optional agreement, in which participants produced between 32% to 38% mismatched verbs in preambles with inanimate plural subject nouns and verb groups (A, B, F, G, and H) but produced only 17% mismatched verbs with verbs in preambles with group (C), 6% with group (D), and only 2% with group (E) (Table 4). This comparison of the mean proportion of the mismatched verbs shows that the participants produced almost the same proportion of mismatched verbs with the Verb Types (A, B, F, G, and H) but different proportions with the Verb Types (C, D, and E). Considering the thematic role

that different verb types assign to their subject nouns, we may conclude that the Verb Type and the thematic role the verb assigns to its subject influences the choice of verb number in optional agreement. Interestingly, there was also an interaction of Verb Tense and Verb Type, showing that verbs were impacted to differing degrees by tense.

Crucially, the effect of Verb Type and the thematic role it assigns to its subject noun appear to be related to semantic meaning rather than grammatical meaning. This results, showing the impact of a semantic factor, is most consistent with a Maximalist view and constraint-based account in which additional, non-syntactic factors may influence agreement.

Conclusion

As predicted, the results of the study showed that Verb Tense was a significant factor in the production of optional subject-verb agreement; the participants produced more mismatched (singular) verbs in the past tense sentences comparing to the present tense sentences, as was predicted by Lotfi (2006).

Also, the Verb Type and the thematic role the verb assigns to its subject was an influential factor in the production of optional subject-verb agreement. Participants produced almost the same portion of mismatched (singular) verb with the verbs in groups (A, B, F, G, and H) in which the verb assigns patient/patient like/ or no role to the subject. But they produced different portions of the mismatched verb with the other verb groups. In these three later verb groups, the verbs assign different thematic roles other than “patient” to their subject nouns. These results suggest the effect of Verb Type and the thematic role they assign to their subjects in the production of optional subject-verb agreement.

These results, that production of a mismatched form of the verb in optional subject-verb number agreement is affected by the Verb Tense and Verb Type and the thematic role the verb assigns to its subject are semantic factors and consistent with the maximalist view and constraint-based account, which argues that in addition to syntactic information other factors, including semantic factors, influence agreement during grammatical encoding and that the agreement is not governed solely by syntactic information.

Table 4-1. Sample preamble of verb type verb tense experiment & possible response

Verb Type	Gloss		possible target response			
A	tænab-ha rope-pl the ropes knot ... <i>the ropes became knotted.</i>	gere ... knot ...	mi-xor-e IND-collide-3SG	mi-xor-æn IND-collide-3PL	xord collide.Past.3SG	xord-æn collide.Past-3PL
B	Lubia-ha bean-pl the beans sprouting ... <i>the beans sprouted.</i>	Jævane ... sprout ...	mi-zæn-e IND-strike-3SG	mi-zæn-æn IND-strike-3PL	zæd strike.Past.3SG	zæd-æn strike.Past-3PL
C	pænjære-ha window-pl the windows rattling ... <i>the windows rattled.</i>	tæq tæq ... rattling ...	mi-kon-e IND-DO-3SG	mi-kon-æn IND-DO-3PL	kærd do.Past.3SG	kærd-æn do.Past-3PL
D	bolændgoo-ha loudspeaker-pl the loudspeakers announcing ... <i>the loudspeakers announced.</i>	elam ... announcing ...	mi-kon-e IND-DO-3SG	mi-kon-æn IND-DO-3PL	kærd do.Past.3SG	kærd-æn do.Past-3PL
E	ætr-ha perfume-pl the perfumes crying ... <i>the perfumes cried.</i>	gerye ... crying ...	mi-kon-e IND-DO-3SG	mi-kon-æn IND-DO-3PL	kærd do.Past.3SG	kærd-æn do.Past-3PL
F	golabi-ha pear-pl the pears ... eaten <i>the pears were eaten.</i>	xorde ... eaten ...	mi-sh-e IND-become-3SG	mi-sh-æn IND-become-3PL	shod become.Past.3SG	shod-æn become.Past-3PL

Table 4-1. Continued

Verb Type	Gloss		possible target response			
G	miz-ha	chubi ...	ye	yæn	bud	bud-æn
	table-pl	Wooden ...	be-PRES-3SG	be-PRES-3PL	be.Past.3SG	be.Past-3PL
		the tables ... wooden <i>the tables were wooden.</i>				
H	ræng-ha	xoshk ...	mi-sh-e	mi-sh-æn	shod	shod-æn
	paint-pl	dry ...	IND-become-3SG	IND-become-3PL	become.Past.3SG	become.Past-3PL
		the paint ... dry <i>the paint dried.</i>				

Table 4-2. Test of within subject effect (per participants)

Source	Df	Mean Square	F	Sig.
tense	1	4.708	47.127	.000
Error (tense)	43	.100		
Verb Type	7	1.798	55.336	.000
Error (verb type)	301	.032		
tense * verb type	7	.229	9.018	.000
Error(tense* verb type)	301	.025		

Table 4-3. Test of within subject effect (per items)

Source	Df	Mean Square	F	Sig.
Tense	1	1.499	207.513	.000
tense * VT	7	.073	10.081	.000
Error(tense)	104	.007		

Table 4-4. Mean proportion of SG verbs produced in present and past sentences

Tense	Mean	Std. Error
Present	.165	.020
Past	.328	.029

Table 4-5. Mean proportion of SG verbs produced in different verb groups

VT	Mean	Std. Error
A	.320	.029
B	.328	.033
C	.172	.022
D	.060	.014
E	.018	.005
F	.383	.037
G	.339	.036
H	.352	.032

Table 4-6. Effect of interaction of Verb Type and Verb Tense in the production of mismatched verbs

Verb Tense	Verb Type	Mean	Std. Error
Present	A	.201	.033
	B	.214	.033
	C	.133	.025
	D	.039	.017
	E	.013	.008
	F	.266	.040
	G	.208	.038
	H	.244	.033
Past	A	.438	.042
	B	.442	.043
	C	.211	.031
	D	.081	.019
	E	.023	.008
	F	.500	.049
	G	.471	.047
	H	.461	.044

CHAPTER 5
EXPERIMENT 3- EFFECT OF UNITY OF SUBJECT NOUN

Overview

The goal of this experiment was to investigate the effect of unified vs. individualized conceptualization of the entities of subject nouns in optional subject-verb agreement. Meshkat al-dini (1987) and Lotfi (2006) proposed that the conceptualization of the entities of subject nouns, as either individual entities or as a unit, influences optional subject-verb agreement in Persian and suggested further study to test the effect of this factor on the selection of singular vs. plural form of the verb for inanimate plural subject nouns. Based on their suggestions and an informal pilot study, it seems likely that Persian speakers do produce more singular verbs with inanimate plural subject head nouns when the entities of the subject head nouns are considered as a unit comparing to the situation when the entities of the subject head nouns are considered as individuals. In the examples below, Persian speakers seem to produce more singular verbs in cases where they consider the entities of the subject plural noun as a whole (e.g. a collection of leaves), while they prefer to use a plural verb in cases where they consider the entities of the subject nouns as individualized (e.g. each leaf on its own).

(5.1) bærg-ha xoshk shod /shod-æn
 leaf-PL dry become.3SG /become-3PL
 ‘the leaves dried.’

This experiment was designed to test this hypothesis, asking if the Unity vs. Individuality of inanimate plural subject nouns would have any effect in subject-verb agreement. And, more specifically, whether the Unity vs. Individuality of inanimate plural

subject nouns causes Persian native speakers to use more singular or plural forms of the verbs.

There is some relevant data from English. As discussed in Chapter 2, Humphreys and Bock (2005) tested the effect of notional number in the subject-verb agreement. In a completion task, they used the ambiguous nature of collective nouns to assess the impact of distributivity in minimally contrastive contexts. Based on Gestalt properties (Wertheimer, 1923), they assumed that '*spatial separation*' made '*individual*' members more significant, while '*spatial collection*' made the '*group*' more significant. They used different prepositions with a modifier to manipulate the notional number of the collective noun. In the example below, the preposition '*on*' emphasizes '*Individuality*' for the ambiguous subject (*the gang*), whereas the preposition '*near*' gives the notion of '*unity*' significance. Using different prepositions, "*the gang on motorcycles*" is spatially separated while "*the gang near motorcycles*" is spatially collected.

(5.2) a. *The gang **on** the motorcycles*

 b. *The gang **near** the motorcycles.....*

Similar to previous completion task studies on agreement, the participants were provided with a series of preambles and instructed to repeat each preamble and then complete the sentence in their own words. The results showed that significantly more plural verbs were used with the distributive conceptualization of the subject than the collective conceptualization.

In this experiment, I used the effect of '*spatial separation vs. spatial collection*' to investigate the effects of collective and distributive conceptualization of the subject in optional subject-verb number agreement in Persian. Similar to Humphreys and Bock

(2005), I used different prepositions with the modifiers of the inanimate plural subjects to highlight the '*Individuality vs. Unity*' of the subject entities. However, because subject-verb number agreement (for inanimate plural subjects) is optional in Persian and both singular and plural forms of the verb are grammatical, I did not need to rely on the ambiguity of collective nouns or the elicitation of errors. I used inanimate plural subjects in normal grammatical sentences.

Based on Meshkat al-dini (1987) and Lotfi (2006)'s suggestion, Humphreys and Bock (2005) and my own informal pilot study, an effect of subject Unity vs. Individuality in subject-verb agreement was predicted. The participants were expected to produce more mismatched verbs (i.e. singular verbs) with the inanimate plural subjects when they focus on the Unity of the elements of the subject nouns but to produce fewer mismatched verbs when they focus on the Individuality of the elements.

Method

Participants

The participants were twenty-five Iranian native speakers of Persian (16 males and 9 females) between 22- 30 years old (mean 26 years). They were members of University of Florida community, and participated in the study voluntarily. The participants were late learners of English who had learned this language for the purpose of education and did not have significant knowledge of any other language. All participants had normal or corrected vision and did not have any cognitive or neurological impairment. The participants of this experiment also participated in Experiments 1 and 4 (testing the effect of subject concreteness). Experiment 1 was conducted more than one year before this experiment, and Experiment 4 was conducted at the same time.

Materials

Twenty-four sets of target and seventy-two distracter preambles were constructed. Twenty-four items out of seventy-two distracter items were the target preambles of another experiment (the effect of Concreteness vs. Abstractness of the subject head nouns on optional agreement, see Chapter 6). The target preambles consisted of an inanimate plural subject noun, a post-modifying prepositional phrase and either a past participle or an adjective, creating two similar structures, passive and inchoative auxiliary (see Chapter 1, “Passive and inchoative in Persian”). The spatial separation vs. collection prepositions of Humphreys & Bock (2005)’s study was used to highlight the collective vs. distributive conceptualizations of the subjects. The prepositions were manipulated so that the prepositional phrases modifying the subject head noun emphasized the Unity (e.g. “*the cups **near** the saucers*” in which cups are seen as a collective group) or Individuality (e.g. “*the cups **on** the saucers*” in which each cup is seen as a separate entity) of the entities in subject positions. The thematic role of the subject nouns was patient. This means that the subjects were acted-on inanimate nouns although they were the subject of the sentence in the absence of an agent noun.

As discussed above, the participants were expected to produce more plural verbs with the distributive conceptualization of the subject. But, this result could be due to an effect of attraction (e.g. the plurality of the local modifier noun). So, a singular modifier preceded by a spatial collection preposition was also examined in a compatible preamble (e.g. “*the cups **near** the saucer*”). Thus, manipulating the Preposition and Number of the local noun created three kinds of subject phrases: Individualized subject with plural modifier (IP), Unified subject with plural modifier (UP), and Unified subject

with singular modifier (US). Table 5-1 shows an example of the conditions of subject nouns and the related prepositional phrases of the preambles.

Similar to the previous experiments in this dissertation, the compound verb structures in Persian enabled me to provide the participants with the non-verbal part of the verbs and restrict the participants to complete the sentences with the auxiliary verb (*/shod/ became.3SG* or */shod-æn/ became-3PL*). Although the participants were told to complete the sentences with any verb they liked, the preambles and the instructions were designed in a way to restrict them to use only the auxiliary verb (*shod, became.3SG* or *shod-æn, become-3PL*). This allowed us to avoid the any effects of different verbs or verb types. The auxiliary */shodæn/ 'to become'* is the auxiliary verb used in passive and inchoative auxiliary structures. So, the preambles in the passive structure consisted of subject noun+ modifying prepositional phrase +past participle while the inchoative auxiliary structure consisted of subject noun + modifying prepositional phrase + adjective. Both types of preambles could be completed by the auxiliary verb */shodæn/ 'to become'*.

Preparing sets of three preambles with inanimate plural subject and modifying prepositional phrase in equal conditions except for the Type of the preposition and Number of the local noun (e.g., *the gems on the rings, the gems near the rings, and the gems near the ring*) led me to use passive sentences. But passive sentences in English are either clearly passive or inchoative auxiliary¹, or ambiguous between these two in Persian (see Chapter 1).

¹ By inchoative auxiliary, I mean the inchoative compound verbs in Persian that consist of non-verbal part plus auxiliary *shodæn/ 'to become'*. As explained in chapter 1, compound inchoative verbs in Persian have different verbal parts, i. e. the auxiliary *shodæn/ 'to become'* is one of the verbal parts and it is not the verbal part of all the compound verbs.

Although the results of the Verb-Type experiment (Chapter 4) showed the similar effects of passive and inchoative auxiliary verbs on the subject verb agreement in Persian (the participants produced similar percentage of SG verbs with the two structures) and they are equivalent of passive structure in English, the preambles of each structure were coded differently (to compare their effects in different structures/ in different experiment). The code (V) was used for passive preambles and (J) for inchoative auxiliary ones. So there were two factors: (1) Type of the Preposition phrase (individual plural, unit plural, and unit singular) and (2) the Structure (passive vs. inchoative auxiliary). This resulted in 6 conditions for the target sentences (IPV, IPj, UPV, UPJ, USV, USJ). A set of sample target preambles for one item and possible target responses of each condition is shown in Table 5-2.

The participants were instructed to read the preambles out loud and complete each sentence with their own auxiliary verb, using informal, spoken Persian. Thus, the participants just needed to complete the sentence with a specific auxiliary verb */shodæn/ 'to become'*. In order to restrict the participants to use only the verb */shodæn/ 'to become'* to get the desired structure, the participants were requested not to use the verb */budæn/ 'to be'* which could also be used in auxiliary structure).

It is worth mentioning that the effect of the stative auxiliary structure (subject noun + adjective + the verb */budæn/ 'to be'*) on optional subject-verb agreement was similar to the effect of passive and inchoative auxiliary structure. Also, in order to keep the effect of tense constant, the participants were told to imagine that all the events of the sentences happened the day before, which allowed them to naturally use the past tense verbs.

The filler items included different kinds of structures. They consisted of a singular or plural (in)animate subject noun, optional singular/plural (in)animate direct object noun, the object marker /ra/ (when there was an object), optional indirect object, and the nonverbal component of a (in)transitive compound verb.

Using a Latin square design, the target sentences of each of the conditions (passive or inchoative auxiliary) were divided into three compatible experimental lists. In each list, there were eight preambles of each condition (with IP, UP, and US subject prepositional phrase). Four of the preambles were with copular structure and the other four preambles with passive. No item repeated so that for each list, each participant saw every item exactly once, and across all the lists each item appeared once in each condition.

The forty-eight filler preambles were the same in all the three lists. The order of the trials was arranged pseudo-randomly so that target sentences from the same condition did not appear next to the each other in the list. Each list was read by eight participants. List of the target and filler items in gloss and in Persian language along with the related condition are available in Appendices C at the end of the dissertation. Since understanding the literal meaning (the third line of the gloss) could be difficult for non-native speakers of Persian, an English grammatical equivalent of the complete sentence was added in the forth line.

Procedure

Participants were tested individually. After giving informed consent, participants sat in front of an Apple MacBook Pro computer equipped with a microphone and running Psyscope X. The experiment started with a set of instruction and four practice trials. As mentioned above, in order to avoid the effect of tense, the participants were

told to imagine that all the events of the sentences happened the day before. When participants indicated that they were ready, the experiment began.

In each trial, the preamble appeared in black text at the center of the computer screen on a white background. The participants were instructed to repeat the preamble, complete the sentence aloud, and then should push a button to continue. At this point a signal (++++++) appeared on the screen. The participants were supposed to push a button again when they were ready to proceed to the next trial. After pushing the button, it would take one second until the next trial would appear. This would give enough time for the investigator to mark the participants' answers in a related checklist. Throughout the experiment, the participant' voice was recorded in a separate file in the computer. This enabled the investigator to check the participant's answers in case she could not follow him/her. The participants' voice files were deleted from the computer when the investigator recorded the participants' answers in the checklists.

Design and Data Analysis

The verbs produced by the participants were coded one or zero based on the singularity (1) or plurality (0) forms of the verbs respectively. Recall that the question for this experiment is whether there is an effect of the Unity vs. Individuality (of the subject phrase) in the production of subject-verb agreement. The dependent variable is thus the proportion of singular verbs out of all items. As already noted above, there were two independent, within-subject factors: Structure (with two levels, passive and inchoative auxiliary) and Type of the Prepositional Phrase (with three levels, Plural prepositional phrase emphasizing the Individuality of subject head noun (IP), Plural prepositional phrase emphasizing the Unity of the subject head noun (UP), Singular prepositional phrase emphasizing the Unity of the subject head noun (US)).

Sets of by-participants (F1) and by-items (F2) Repeated Measures ANOVAs with the two-level factor Types of Structure and three-level factor Types of the Prepositional phrase performed. In addition, planned paired-sample t-tests were performed. An alpha level of .05 was used for all statistical tests. One participant's data were excluded from analysis because the participant had difficulty performing the task in informal Persian language. The remaining 24 participants' data was used in the analysis.

Results

There were two independent, within-subject factors: Structure (with two levels, passive and inchoative auxiliary) and Type of the Prepositional Phrase (with three levels, Individualized Plural, Unified Plural, and Unified Singular).

- *IPV: 'the gems on the rings was/were chosen'*
- *UPV: 'the gems near the rings was/were chosen'*
- *USV: 'the gems near the ring was/were chosen'*
- *IPV: 'the cellphones in the bags turned off'*
- *UPV: 'the cellphones near the bags turned off'*
- *USV: 'the cellphones near the bag turned off'*

This analysis revealed a main effect of Types of Prepositional phrase ($F_1 (2, 46) = 4.449, MSE= 0.107, p < 0.05; F_2 (2, 44) = 8.338, MSE= 0.028, p < 0.05$), with singular or plural prepositional phrase emphasizing on the unity of the subject entities. There was no effect of Structure ($F_1 = 2.67$) or an interaction between Types of Prepositional phrase and Structure ($F_1 < 1, F_2 < 1$). This shows that the structure of the sentence did not have an effect on the singularity or plurality form of the verbs that the participants produced. These results are reflected in Table 5-3 and 5-4

These results indicate that the conceptualization (Unity vs. Individuality) of the entities of the subject nouns was an effective factor in the optional subject-verb agreement in Persian. This means that under nearly equal conditions with inanimate plural subjects, the participants produced more singular verbs when the preposition of the subject's modifying phrase emphasized/implies the unity (and not the individuality) of the entities of the subjects. On the other hand, the lack of a significant effect of Structure Type suggests that the passive and inchoative auxiliary structures do not have different effects in optional subject-verb agreement (similar to the result of Experiment 2, Chapter 4). Hence, the participants produced more mismatched (singular) verbs for the Unified inanimate subject nouns (UPJ, UPV, USJ, and USV) compared to the Individualized inanimate plural subject nouns (IPj and IPV).

The above result showed that the participants produced more singular verbs with unified conceptualization of the subject. In order to ensure that this result is due to the effect of Unity vs. individuality of entities of the subject noun and not due to the attraction effect of the local noun (the effect of the plurality of the local modifier noun) on the verb, the proportions of singular verbs produced with Unified Plural and Unified Singular were compared. Table 5-5 shows the proportion of singular verb usage with different prepositional phrase. According to this table, there is not much difference between the proportion of singular verbs produced with the Unified Plural (0.41) and Unified Singular (0.44) prepositional phrases, compared to the proportion of singular verbs produced with Individualized Plural prepositional phrases (0.26).

These results show that the participants produced 0.44% singular verbs with modifying prepositional phrase that emphasized the unity of the elements of the plural

subject head noun while the local noun of the prepositional phrase was singular (e.g. *the gems near the ring*). Participants produced 0.41% singular verbs with prepositional phrases which emphasized the unity of the elements of the plural subject head nouns while the local noun of the prepositional phrase was plural (e.g. *the gems near the rings*). And, finally, they produced 0.26% singular verbs with modifying prepositional phrases which emphasized the individuality of the elements of the plural subject head noun while the local noun of the prepositional phrase was plural (e.g. *the gems on the rings*). So, comparing the proportion of singular verbs produced with a singular vs. plural modifier preceded by a spatial collection preposition shows that there is an effect of attraction (the effect of plurality of the local modifier noun) but that this effect is much less than the effect of Unity vs. Individuality of entities of subject nouns.

Table 5-6 shows the results of a pairwise comparison of the different prepositional phrases. The difference between Individual Plural and Unity plural is significant while the difference between Unity plural and Unity singular is not.

Table 5-7 shows the mean proportion of mismatched verb used with the three prepositional phrase and two structures.

Discussion

The results of this study showed that the participants produced more mismatched verbs (singular verbs) with inanimate plural subject nouns in the condition that the preposition of the prepositional phrase modifying the subject head noun was emphasizing on the Individuality of the entities of the subject noun (e.g. *the gems on the rings*) compared to the condition in which the preposition of the prepositional phrase modifying the subject head noun was emphasizing on the Unity of the entities of the subject noun (e.g. *the gems near the rings*). This result indicates that the unity vs.

Individuality conceptualization of the inanimate plural subject entities has a significant role in the production of singular/plural form of the related verb.

In order to check that this effect is due to the unity vs. individuality conceptualization of the subject nouns and not due to the attraction effect of the plurality of the local noun of the prepositional phrase modifying the subject, the proportions of the singular verbs produced in sentences with singular vs. plural local nouns were compared. The result showed that the plurality of the local nouns had an attraction effect on optional subject-verb agreement (more singular verbs were produced with Unified Singular comparing to Unified Plural), but this effect was much less than the effect of Unity vs. Individuality of the subject.

Finally, the results of this study did not show any effect of structure type. This means that passive and inchoative auxiliary structures had almost the same effect on form of the verb (to produce singular or plural verb).

Crucially, the effect of Unity vs. Individuality of the entities of the subject appears to be related to the conceptual meaning rather than grammatical meaning. This implies the influence of a semantic factor, rather than a purely syntactic influence. In the target items of this experiment, the inanimate plural subject nouns are the same. What matters is that the entities of one subject are conceptualized as a unit while the entities of another subject are conceptualized as individuals by the preposition of their modifying prepositional phrases. Hence, the participants prefer to produce more singular verbs with the inanimate plural subject nouns conceptualized as a unit rather than individual ones. The fact that conceptual meaning could influence agreement is most consistent

with a Maximalist view and constraint account in which additional, non-syntactic factors may influence agreement.

Conclusion

In this study, the effect of unified vs. individualized conceptualization of inanimate plural subject nouns in optional subject-verb agreement in Persian was tested. The optional subject-verb number agreement of Persian (for the inanimate plural subjects) creates an exceptional condition to test the effect of conceptual meaning of subject nouns in subject-verb agreement in otherwise almost equal conditions, where all the materials were grammatical sentences and there was no need to use elicitation of errors neither ambiguity of distributive or collective nouns.

Creating preambles with inanimate plural subject head noun, a modifying prepositional phrase, and nonverbal part of the compound verb led me to passive and inchoative auxiliary structures. I coded these two structures differently, resulting in two factors: Structure Type and Type of the Prepositional phrase. The prepositions emphasized either the Unity or Individuality of the entities of the subject. In order to test the attraction effect of the plurality of the local noun (the noun of the prepositional phrase), the number of the local noun were manipulated. So, there were three Types of Prepositional phrase; Individualized Plural, Unified Plural, and Unified Singular. The participants read the preambles and complete the sentences with the verbal part of the compounds.

As predicted, the results of the study showed that the singularity vs. plurality of the produced verbs was affected by the Types of the Prepositional phrase. More specifically, the participants produced more singular verbs with Unified prepositional phrases rather than Individualized ones. Comparing the proportion of singular produced

verbs with Unified Singular and Unified Plural Prepositional phrases showed a small attraction effect of local nouns (the noun of the prepositional phrase) but this effect was much less than the effect of Unity vs. Individuality of the subject noun. This result, that the optional subject-verb number agreement is affected by Unity vs. Individuality conceptualization of the entities of the subject noun, supports the Maximalist view and constraint account which argues that both conceptual and syntactic information influence agreement during grammatical encoding and the agreement is not governed solely by syntactic information.

Table 5-1. Conditions of subject phrases

Condition	example		
Individual plural	negin-ha-ye gem-PL-EZ the gems on the rings	ruy-e on-EZ	ængoshtær-ha ring-PL
Unity Plural	negin-ha-ye gem-PL-EZ the gems near the rings	næzdik-e near-EZ	ængoshtær-ha ring-PL
Unity Singular	negin-ha-ye gem-PL-EZ the gems near the ring	næzdik-e near-EZ	ængoshtær ring

Table 5-2. Sample preamble and possible target response for each condition

condition	Preamble				possible target response		
IPV	negin-ha-ye	ruy-e	ængoshtær-ha	pæsændid-e	.....	shod	/shod-æn
	gem-PL-EZ	on-EZ	ring-PL	chose-pp	.....	became.3SG	/became-3PL
	the gems on the rings chosen.						
	the gems on the rings were chosen.						
UPV	negin-ha-ye	næzdik-e	ængoshtær-ha	pæsændid-e	.....	shod	/shod-æn
	gem-PL-EZ	near-EZ	ring-PL	chose-pp	.....	became.3SG	/became-3PL
	the gems near the rings .....chosen.						
	the gems near the rings were chosen.						
USV	negin-ha-ye	næzdik-e	ængoshtær	pæsændid-e	.....	shod	/shod-æn
	gem-PL-EZ	near-EZ	ring	chose-pp	.....	became.3SG	/became-3PL
	the gems near the ring .....chosen.						
	the gems near the ring were chosen.						
IPJ	mobayl-ha-ye	daxel-e	kif-ha	xamush	.....	shod	/shod-æn
	cellphone-PL-EZ	inside-EZ	bag-PL	off	.....	became.3SG	/became-3PL
	the cellphones in the bags .....off.						
	the cellphones in the bags turned off.						
UPJ	mobayl-ha-ye	næzdik-e	kif-ha	xamush	.....	shod	/shod-æn
	cellphone-PL-EZ	near-EZ	bag-PL	Off	.....	became.3SG	/became-3PL
	the cellphones near the bags .....off.						
	the cellphones near the bags turned off.						
USJ	mobayl-ha-ye	næzdik-e	kif	xamush	.....	shod	/shod-æn
	cellphone-PL-EZ	near-EZ	bag	Off	.....	became.3SG	/became-3PL
	the cellphones near the bag .....off.						
	the cellphones near the bag turned off.						

Table 5-3. Test of within subject effect per participants

Source	Df	Mean Square	F	Sig.
Structure	1	.125	2.290	.144
Error(structure)	23	.055		
Prepositional phrase	2	.456	4.414	.018
Error(PP)	46	.103		
structure * prepositional phrase	2	.003	.076	.926
Error(structure*prepositioal phrase)	46	.040		

Table 5-4. Test of within subject effect (per items)

Source	df	Mean Square	F	Sig.
Prepositional phrase	2	.237	8.338	.001
Prepositional phrase * structure	2	.002	.053	.948
Error(prepositional phrase)	44	.028		

Table 5-5. Mean proportion of mismatched verb usage with different modifying prepositional phrase

Prepositional phrase	Mean	Std. Error
Individual plural	.255	.060
Unity Plural	.406	.066
Unity singular	.438	.059

Table 5-6. Pairwise comparisons of proportion of mismatched verb usage with different modifying prepositional phrase

(I) prepositional phrase	(J) prepositional phrase	Mean Difference (I-J)	Std. Error	Sig. ^a
Individual plural	Unity plural	-.151*	.071	.043
	Unity singular	-.182*	.076	.026
Unity plural	Individual plural	.151*	.071	.043
	Unity singular	-.031	.046	.503
Unity singular	Individual plural	.182*	.076	.026
	Unity plural	.031	.046	.503

Table 5-7. Mean proportion of singular verb usage (interaction of prepositional phrase and structure)

Structure	Prepositional Phrase	Mean	Std. Error
Inchoative	Individual Plural	.219	.059
	Unit Plural	.385	.060
	Unit Singular	.406	.065
Passive	Individual Plural	.292	.073
	Unit Plural	.427	.082
	Unit Singular	.479	.070

CHAPTER 6 EXPERIMENT 4- EFFECT OF SUBJECT NOUN CONCRETENESS

Overview

The goal of this study was to test the effect of Concreteness vs. Abstractness of inanimate plural subject nouns in optional subject-verb number agreement in Persian. Eberhard (1999) investigated the effect of conceptual number of distributive subject phrases on verb agreement. The results indicated that the concreteness or imageability of the conceptual representation may affect the availability of conceptual number to the agreement process. Basically, more plural verbs were produced with concrete/ imageable distributive nouns (e.g. *the stamp on the envelopes* vs. *the crime in the cities*).

Similar to many other studies on agreement processing, Eberhard (1999) used the elicitation of agreement errors in a completion task. Optional subject-verb number agreement in Persian provides a good situation in which to test the effect of Subject Concreteness vs. Abstractness on subject-verb number agreement with normal grammatical sentences (because there is no need to use elicitation of agreement errors or the ambiguity of distributive nouns).

The experiment in this chapter asked whether the concreteness vs. abstractness of inanimate plural subject nouns cause Persian native speakers to produce more singular or plural verbs in optional subject-verb number agreement. Based on an informal pilot study, participants were predicted to produce more mismatched (singular) verbs with the abstract inanimate plural subject nouns rather than with the concrete ones.

Method

Participants

The participants were twenty-five Iranian native speakers of Persian (16 males and 9 females) between 22- 30 years old (mean 26 years). They were members of University of Florida community, and participated in the study voluntarily. The participants were late learners of English who had learned this language for the purpose of education and did not have significant knowledge of any other language. All participants had normal or corrected vision and did not have any cognitive or neurological impairment. The participants of this experiment also participated in Experiments 1 (Chapter 3) and 3 (Chapter 5). Experiment 1 was conducted more than one year before Experiments 3 and 4, which were conducted at the same time.

Materials

Twenty-four sets of target and seventy-two distracter preambles were constructed. Twenty-four items out of seventy-two distracter items were the target preambles of Experiment 3 (see Chapter 5). The target preambles consisted of a concrete or an abstract inanimate plural subject noun plus either a past participle or an adjective, creating two similar structures, passive and inchoative auxiliary (see Chapter 1). In all the sentences, the thematic role of the subject nouns was theme, so that all the subjects were acted-on inanimate nouns.

This experiment was conducted in the same session as Experiment 3. Although the result of Experiment 2 (Chapter 4) showed similar effects of passive and inchoative auxiliary verbs on subject-verb agreement in Persian (e.g. participants produced similar percentages of singular verbs with these two structures), the preambles of each structure were still coded differently. The code (V) was used for passive preambles and

(J) for inchoative auxiliary (because inchoative consists of and adjective + the auxiliary /shodæɪn/, to become'). Also, depending on the Concreteness vs. Abstractness of the subject nouns, two conditions were created and coded as (C) and (A) respectively. So, there were two factors: (1) Type of the subject (Concrete vs. Abstract subject head noun) and (2) Structure (Passive vs. Inchoative auxiliary). This created 4 conditions for the target sentences. A set of sample target preambles and possible responses of each condition is shown in Table 6-1.

The participants were instructed to read the preambles and complete each sentence with their own verb, using informal, spoken Persian. Because of the passive and inchoative auxiliary structures used, giving the nonverbal part of the verbs meant that the participants just needed to complete the sentence with a specific auxiliary verb (/shodæɪn/ (to become)). In order to have the participants use only the verb /shodæɪn/ (to become) to get the desired structure, the participants were requested not to use the other possible option (the verb /budæɪn/ 'to be' which can be used with adjectives, giving a copular structure). In order to keep the effect of tense constant, the participants were told to imagine that all the events of the sentences happened the day before, which allowed them to naturally use past tense verbs.

The filler items included different kinds of structures. They consisted of a singular or plural subject noun, optional singular/plural (in)animate direct object noun, the direct object marker /ra/ (when there was a direct object), optional indirect object, and the nonverbal part of the compound verb.

Using a Latin square design, the target sentences of each of the structures (passive or inchoative auxiliary) were divided into two compatible experimental lists. In

each list, there were twelve preambles of each condition (with concrete (C) vs. abstract (A) subject nouns). Six of the preambles were Inchoative auxiliary and the other six preambles were passive. No item repeated so that for each list, each participant saw every item exactly once, and across all the lists each item appeared once in each condition. The forty-eight filler preambles were the same in both of the lists. The order of the trials was arranged pseudo-randomly so that target sentences from the same condition did not appear next to each other in the list. Each list was read by twelve participants.

A list of the target and filler items in gloss and in Persian, along with the related conditions, are available in Appendices D at the end of this dissertation. Since understanding the literal meaning (the third line of the gloss) could be difficult for non-native speakers of Persian, an English grammatical equivalent of the complete sentence was added in the fourth line.

Procedure

Participants were tested individually. After giving informed consent, participants sat in front of an Apple Mac computer equipped with a microphone running Psyscope X. The experiment started with instructions followed by four practice trials. As mentioned above, in order to avoid an effect of tense, the participants were told to imagine that all the events of the sentences happened the day before. When participants indicated they were ready, the experiment began.

In each trial, the preamble appeared in black text at the center of the computer screen on a white background. The participants were instructed to repeat the preamble, complete the sentence, and then press any key to continue. As this point, a signal (+++++) appeared on the screen. The participants were supposed to press any key

again when they were ready to proceed to the next trial. After pressing the key, it would take one second until the next trial would appear. This would give enough time to mark the participants' answers on an answer sheet. Participants' voices were recorded in a separate file in the computer. This enabled the investigator to check the participant's answers in case she could not follow him/her. The participants' voice files were deleted from the computer when the investigator recorded the participants' answers in the checklists.

Design and Data Analysis

The verbs produced by the participants were entered into an Excel spreadsheet, coded one or zero based on the singularity (1) or plurality (0) forms of the verbs respectively, giving us a proportion of singular (mismatching) verbs.

Recall that the question for this experiment is whether there is an effect of Concreteness vs. Abstractness (of the subject noun) in the production of subject-verb agreement. The dependent variable is the proportion of singular verbs out of all items. As already noted above, there were two independent, within-subject factors: Structure (with two levels, Passive and Inchoative auxiliary), and Type of the Subject Noun (with two levels, Concrete vs. Abstract subject noun).

Sets of by-participants (F1) and by-items (F2) Repeated Measures ANOVAs with the two-level factor Type of the Subject and two-level factor Structure were performed. In addition, planned paired-sample *t*-tests were performed. An alpha level of .05 was used for all statistical tests. One participant's data were excluded from analysis because the participant had difficulty performing the task in informal Persian language (see Chapter 5). The remaining 24 participants' data was used in the analysis.

Results

There were two independent, within-subject factors: Structure (with two levels, passive and inchoative auxiliary) and Type of the Subject (with two levels, Concrete vs. Abstract).

AJ: Abstract subject with inchoative verb, *the realities became visible.*

CJ: Concrete subject with inchoative verb, *the ships became visible.*

AV: Abstract subject with passive verb, *the hopes were given.*

CV: Concrete subject with passive verb, *the computers were given.*

This analysis revealed a main effect of Types of Subject (Concrete vs. Abstract) ($F_1(1, 23) = 34.563$, $MSE = 0.046$, $p < 0.01$; $F_2(1, 22) = 22.645$, $MSE = 0.035$, $p < 0.01$). There was no effect of Structure ($F_s < 1$) or an interaction between Types of the Subject (Concrete vs. Abstract) and Structure ($F_1 = 1.960$, $F_2 < 1$). These results show that the Concreteness vs. Abstractness of the subject has a significant effect on the singularity or plurality of the verbs that the participants produced while Structure of the sentence does not. The results are reflected in Tables 6-2 and 6-3.

These results indicate that the Type of the subject (Concrete vs. Abstract) was a critical factor in optional subject-verb agreement in Persian. This means that the participants produced more singular verbs with Abstract inanimate plural subjects compared to Concrete ones. Table 6-4 shows the mean proportion of mismatched verb used with Abstract and Concrete subject nouns and Table 6-5 shows the pairwise comparison of them.

On the other hand, the lack of a significant effect of Type of the Structure suggests that the Passive and Inchoative auxiliary structures did not have different effects in optional subject-verb agreement. Tables 6-6 and 6-7.

Hence, the participants produced more mismatched (singular) verbs with the Abstract inanimate plural subject nouns either in passive or inchoative auxiliary structure (AV & AJ) compared to the Concrete inanimate plural subject nouns (CV & CJ). This result is shown in Table 6-8.

Discussion

The results of this study showed that the participants produced more mismatched verbs (singular verbs) with Abstract inanimate plural subject nouns rather than with Concrete ones. This indicates that the Concreteness vs. Abstractness of the inanimate plural subject entities has a significant effect on the singularity/plurality of the optional agreement. But, the results of this study did not show any effect of the structure. This means that passive and inchoative auxiliary structures had almost the same effect on form of the verb (to produce singular or plural verb). This result is in line with the results of Chapter 4, in which passive and inchoative auxiliary structure had almost the same effect in the production of optional subject-verb number agreement).

Crucially, the effect of Concreteness vs. Abstractness of the subject noun appears to be related to the semantic meaning rather than grammatical meaning. As in Chapter 5, this implies the effect of semantic factors, rather than purely syntactic ones. Both abstract and concrete plural subject nouns have the same plural morpheme /-ha/ but the participants produced more singular verbs with the Abstract plural subject nouns. This fact that the Abstractness of nouns could influence agreement is most consistent with a Maximalist view and constraint account in which additional, non-syntactic factors may influence agreement.

Conclusion

In this study, the Concreteness vs. Abstractness of inanimate plural subject nouns in the subject-verb agreement was tested. Optional subject-verb number agreement of Persian (for the inanimate plural subjects) provides an exceptional situation in which to test the effect of a semantic factor (Abstractness vs. Concreteness of the subject nouns) in subject-verb agreement where all experimental materials are grammatical sentences with no need to use elicitation of errors or the ambiguity of collective or distributive nouns.

The preambles consisted of a subject head noun and non-verbal part of the compound verb, which led me to use passive and inchoative auxiliary structures. I coded these two structures differently, leading to two factors: Structure (inchoative auxiliary vs. passive) and Type of the subject noun (Concrete vs. Abstract).

As predicted, the results of the study showed that the singularity vs. plurality of the produced verbs was affected by the Concreteness vs. Abstractness of the subject nouns. More specifically, the participants produced more singular verbs with Abstract inanimate plural subject nouns rather than Concrete ones. This result, that optional subject-verb number agreement is affected by a semantic factor (concreteness vs. abstractness of the subject noun) supports the maximalist- constraint account which argues that in addition to syntactic information other factors including semantic factors influence agreement during grammatical encoding and that the agreement is not governed solely by syntactic information.

Table 6-1. Sample of preamble and possible response for concreteness experiment

structure	condition	Gloss			possible target response	
inchoative	abstract	vaqe'iyæt-ha	pædidar	...	shod	/shod-æn
		reality-PL	visible	...	became.3SG	/became-3PL
		the realities ... visible. <i>the realities became visible.</i>				
inchoative	concrete	keshti-ha	pædidar	...	shod	/shod-æn
		ship-PL	visible	...	became.3SG	/became-3PL
		the ships ... visible. <i>the ships became visible.</i>				
Passive	abstract	ræftar-ha	pæsændid-e	...	shod	/shod-æn
		behavior-PL	approved-pp	...	became.3SG	/became-3PL
		the behaviors ... approved. <i>the behaviors were approved.</i>				
Passive	concrete	lebas-ha	pæsændid-e	...	shod	/shod-æn
		clothe-PL	approved-pp	...	became.3SG	/became-3PL
		the clothes ... approved. <i>the clothes were approved.</i>				

Table 6-2. Test of within subject effect (per participants)

Sources	Df	Mean Square	F	Sig.
Concreteness	1	1.584	34.563	.000
Error(concreteness)	23	.046		
Structure	1	.019	.687	.416
Error(structure)	23	.027		
concreteness * structure	1	.057	1.960	.175
Error(concreteness*structure)	23	.029		

Table 6-3. Test of within subject effect (per items)

Source	df	Mean Square	F	Sig.
Concreteness	1	.792	22.645	.000
concreteness * structure	1	.028	.811	.378
Error(concreteness)	22	.035		

Table 6-4. Mean proportion of mismatched verb with concrete and abstract subject

Concreteness	Mean	Std. Error
Abstract	.705	.045
Concrete	.448	.051

Table 6-5. Pairwise comparison of concrete vs. abstract subject

(I) concreteness	(J) concreteness	Mean Difference (I-J)	Std. Error	Sig.a
Abstract	Concrete	.257*	.044	.000
Concrete	Abstract	-.257*	.044	.000

Table 6-6. Mean proportion of singular verb produced in different structure

Structure	Mean	Std. Error
inchoative	.590	.042
Passive	.563	.050

Table 6-7. Pairwise comparison of inchoative and passive structures

(I) structure	(J) structure	Mean Difference (I-J)	Std. Error	Sig.a
inchoative	Passive	.028	.034	.416
Passive	Inchoative	-.028	.034	.416

Table 6-8. Mean proportion of singular verb usage (interaction of concreteness and structure)

concreteness	structure	Mean	Std. Error
Abstract	Inchoative	.743	.050
	Passive	.667	.050
Concrete	Inchoative	.438	.048
	Passive	.458	.065

CHAPTER 7
EXPERIMENT 5- OBJECT ATTRACTION EFFECT

Overview

As discussed in Chapter 1, in Persian, singular nouns are the unmarked form and thus do not have any overt morpheme to show singularity. On the other hand, plural nouns may get different plural-marking morphemes depending on the animacy of the noun. Persian employs two plural morphemes: /-ha/ and /-an/. The suffix /-ha/ can be used for all plural nouns regardless of animacy while the suffix /-an/ is used only for animate plural nouns. One of the goals of this study is to test the effect of morphology (that is, the effect of different plural morphemes) in optional subject-verb agreement.

(7.1)	<i>zæn-ha</i>	<i>chætr-ha</i>
	<i>woman-PL</i>	<i>umbrella-PL</i>
	<i>'women'</i>	<i>'umbrellas'</i>
	<i>zæn-an</i>	<i>*chætr-an</i>
	<i>woman-PL</i>	<i>umbrella-PL</i>
	<i>'women'</i>	<i>'umbrellas'</i>

As discussed in Chapter 2, Bock & Miller (1991) and the replications of it in several SVO languages have reported an attraction effect of local nouns (i.e. the argument NP of a prepositional phrase on the head noun subject (e.g., *the key to the cabinets*) on subject-verb agreement. However, while the results of these studies have been very informative, they are still somewhat problematic in two ways: first, because the languages studied have been SVO languages, the role of the verb's object noun as

an attractor remains unclear and, second, there remains an ongoing debate about whether object nouns can serve as attractors.

Some experiments have tested the attraction effect of the intermediary object pronoun in SVO languages. Antón-Méndez (1996)'s study in Spanish tested the attraction effect of the preverbal, pronominal direct object, however, the results showed no attraction effect. This finding could be due to the effect of syntactic function in that the object is out of subject phrase and due to insulation of syntax, it cannot affect the subject-verb agreement. There could also be an effect of the part of speech. That is, the effect of the object noun could be different from the object pronoun because the processing of pronouns could be different from words as the pronouns may have accusative markers. This is the case in Spanish. The unmarked word order is SVO but the object pronoun, which has accusative case, is preverbal. On the other side, Hartsuiker, Antón-Méndez, & van Zee (2001) tested the attraction effect of intermediary object nouns in complement clauses in Dutch. In Dutch, as the following example shows, the object of the complement clause is preverbal.

(7.2) Karin zegt dat het meisje de krans en WIN
Karen says that the girl the garland s WIN

'Karen says that the girl WIN the garlands.'

The results showed the attraction effect of the object (of the embedded clause), but the effect was less than the attraction effect of the subject modifier phrase. The same authors also tested the effect of object pronouns in the embedded clause in two conditions: case ambiguous pronouns vs. unambiguous pronouns. The results showed

a strong attraction effect of embedded clause object pronouns when case was ambiguous. But, the unambiguous objects did not show attraction effect.

The Persian language has some specific characteristics that make it a special language for studying agreement. The unmarked word order in Persian is Subject-Object-Verb (SOV language), and thus the object noun naturally intervenes between the subject and its verb, creating a good test case for object attraction without needing to rely on marked syntactic structures or clitics (e.g. in French by Hartsuiker, Antón-Méndez, & van Zee (2001)).

(7.3) les pommes, je les ai mangées
 the apples, (fem, pl) I them (object, clitic) have eaten (fem, pl)
 'the apples, I have eaten them'

Second, and more fundamentally, because all of the results thus far have obtained in languages in which number agreement is always required, they are based on the production and comprehension of ungrammatical structures. While this approach has provided valuable data and insights into how grammatical information is used during online processing, it is less than ideal for data to come solely from studies that require participants to either produce or read ungrammatical structures. Optional subject-verb number agreement in Persian (third person inanimate plural subject nouns can have singular or plural verbs) provides the opportunity to have grammatical acceptable sentences with matched (plural) and mismatched verbs (singular).

Thus, the main goal of this study was to test the influence of the main clause object noun on the optional subject-verb agreement in an SOV language, and more specifically, to test the effects of animacy, number, and different types of plural

morphemes of the object nouns in the singular vs. plural form of the produced verb. Considering the intermediary position of the object in SOV-order sentences in Persian, I predict that the object will serve as an attractor for number marking on the verb: More plural verb morphology is expected when the object is plural compared to when it is not. Further, because subject-verb agreement for animate subjects is obligatory in Persian but not for inanimate plural subjects, the animacy of the object may influence the strength of any attraction effect, with strongest effects occurring for animate objects (the obligatory case for subject agreement). The predictions for the different types of plural morpheme are less clear, but given that the plural morpheme /-ha/ is the unmarked suffix used for all animate and inanimate nouns while the plural morpheme /-an/ is specifically used for animate nouns, we can expect that speakers will produce more plural forms with an animate plural objects that are suffixed with /-an/ compared to /-ha/.

Methods

Participants

The participants were 46 Iranian native speakers of Persian (29 males and 17 females) between 22- 43 years old (mean 28 years). They were members of the University of Florida community, and participated in the study voluntarily. The participants were late learners of English who had learned this language for the purpose of education and did not have significant knowledge of any other language. All participants had normal or corrected vision and did not have any cognitive or neurological impairment. The participants of this experiment also participated in Experiment 2 (Effect of Verb Type & Verb Tense), which was conducted at the same time.

Materials

Forty target and forty distracter items were constructed. The target items consisted of a sentence preamble with an inanimate plural subject noun, a direct object noun, the direct object marker /ra/ (seen as /ro/ or /o/ in spoken language) and the nonverbal part of a transitive compound verb. The thematic role of the subject was 'intermediary instrument'. This means that the subjects were inanimate nouns that were used to accomplish a job, and were also the subject of the sentence in the absence of the agent noun. In order to avoid effects of subject concreteness/abstractness, only concrete nouns were selected as subject of the sentence. By systematically varying the animacy, number, and plural suffix type of the object nouns, five conditions of preambles were created:

- 1) APN: animate plural object with suffix /-an/ (e.g. *æsb-an*, *horse-Pl*, 'horses')
- 2) APH: animate plural object with suffix /-ha/ (e.g. *æsb-ha*, *horse-Pl*, 'horses')
- 3) ASO: animate singular object with no suffix (e.g. *æsb*, *horse.SG*, 'horse')
- 4) IPH: inanimate plural object with suffix /-ha/ (e.g. *mojæseme-ha*, *statue-PL*, 'statues')
- 5) ISO: inanimate singular object with no suffix (e.g. *mojæseme*, *statue.SG*, 'statue')

All the verbs used in this experiment were combined compound verbs, and as such, participants were instructed to read the preambles out loud and then create a complete sentence using informal, spoken Persian. By providing the nonverbal part of the compound verbs in the preamble, participants crucially only needed and were restricted to completing the sentence with the verbal part of the compound verb as can be seen in Table 7-1. In order to grammatically and sensibly complete the preambles,

participants needed to use the verbal part /kærdæn/ (to do) in twenty-nine of the items, /dadæn/ (to give) in five, /bordæn/ (to take) in three, /dashtæn/ (to have) in two, and /gereftæn/ (to take) in one. A set of sample target preambles for one item and possible responses of each condition is shown in Table 7-1.

As we saw in Chapter 4, verb tense appears to interact with subject-verb agreement phenomena in Persian. Thus, in order to control for this effect and keep it constant across trials, participants were told to imagine that all the events in the sentences happened the day before, which allowed them to naturally use the past tense verbs.

The filler preambles looked superficially like the target preambles, but included different kinds of structures. These filler preambles consisted of a singular or plural subject noun, singular/plural (in)animate object noun, the direct object marker /ra/, and the nonverbal component of a transitive complex predicate. The purpose of these filler items was to prevent expectations and boredom in the participants.

Using a Latin square design, the target items were divided into five compatible experimental lists. In each list, there were eight items of each condition (with APN, APH, ASO, IPH, and ISO objects), with no item repeated within a list, so that for each list, each participant saw every item exactly once, and across all the lists each item appeared once in each condition. The forty filler items were the same in all the five lists. The order of the trials was arranged pseudo-randomly so that target sentences from the same condition did not appear next to the each other in the list. In total, each list was read by nine participants.

A list of the target and filler items in gloss and in Persian, along with the related conditions, are available in Appendix E. Since understanding the literal meaning (the third line of the gloss) could be difficult for non-native speakers of Persian, an English grammatical equivalent of the complete sentence was added in the fourth line.

Specific and unspecific direct object in Persian. In this experiment, I tested the effect of intervening object noun in the optional subject verb agreement. The object nouns of the target preambles were [+definite, +specific] and followed by direct object marker (OM) /ra/. Considering the probable effect of object marker /ra/ in distinguishing the object argument from the rest of the sentence, the question may be raised as why to use definite objects which have the marker /ra/ and not objects without object markers. To answer this question, I need to explain the types of direct objects with respect to specificity and definiteness. Manipulating specificity and definiteness in Persian gives us three kinds of nouns: [- specific, - definite], [+ specific, - definite], and [+ specific, + definite].

Objects that are [-specific, -definite] are always singular – they cannot be plural. Neither can they have a demonstrative or possessive pronoun nor be followed by the object marker /ra/. As was explained in Chapter 1 (c.f. Incorporation and example 1.18), the direct objects of these kind of sentences lose their grammatical endings and incorporate with the verb. In this way, the non-specific object and the transitive verb create an intransitive compound verb which is a “conceptual whole” and the meaning of these incorporated compound verbs is transparent (Dabir-Moghaddam, 1997).

- (7.4) (Niki) sib chid
 (Niki) apple picked.3SG
 Lit., (Niki) did apple-picking
 '(Niki) picked apple'

Therefore, it was not possible to use [-specific, - definite] objects in this experiment, because this type of object incorporates with the verb, ultimately becoming a part of the compound verb. Moreover, it does not have plural form; so, testing the attraction effect of the object and its features in the agreement was not possible.

Objects that are [+specific, -definite] can be singular or plural, but cannot have demonstrative or possessive pronouns. They do, however, need the indefinite marker /-i/ with singular and plural nouns or the number of the items before the name. This type of object does not need to receive the object marker /ra/.

- (7.5) a. (Niki) sib-i chid
 (Niki) apple-INDEF picked.3SG
 '(Niki) picked an apple'
- b. (Niki) yek-sib-(i) chid
 (Niki) one-apple-(INDEF) picked.3SG
 '(Niki) picked an apple'
- c. (Niki) sib-ha-i chid
 (Niki) one-apple-INDEF picked.3SG
 '(Niki) picked an apple'

- d. (Niki) chænd ta sib chid
 (Niki) a few apple picked.3SG
 '(Niki) picked a few apples'

Thus, I did not use [+specific, -definite] object nouns because the frequency of this type of object (especially with animate plural noun with suffix /-an/) did not seem to be common enough. The examples (7.5a) and (7.5c) are grammatical and acceptable sentences but it is difficult to create enough simple target sentences of this kind (i.e. with inanimate plural subject nouns). Moreover, the indefinite morpheme /-i/ is suffixed to the singular noun or to the plural suffix /-ha/ or /-an/. Hence, the indefinite marker /-i/ intervenes between the object noun and the verb. Examples (7.5b) and (7.5d) with number or quantifiers and a singular form of the noun seem to be more common. But, the singularity or plurality of nouns is shown by the number or quantifiers preceded the nouns and not plural suffix /-ha/ or /-an/.

Conversely, [+definite, +specific] direct object nouns in Persian are followed by the marker /ra/. These nouns can be singular or plural and have demonstrative and possessive pronouns.

- (7.6) a. (Niki) sib ro chid
 (Niki) apple OM picked.3SG
 '(Niki) picked the apple'
- b. (Niki) sib-ha ro chid
 (Niki) apple-PL OM picked.3SG
 '(Niki) picked the apples'

c. (Niki) sib-esh ro chid
(Niki) apple-her OM picked.3SG
'(Niki) picked her apple'

d. (Niki) un sib ro chid (næ in yeki)
(Niki) that apple OM picked.3SG (not this one)
'(Niki) picked that apple (not this one)'

I used this type of object because I could manipulate the animacy, number of the object noun, and type of the plural morphemes to create more natural target preambles.

Procedure

Participants were tested individually. After giving informed consent, participants sat in front of an Apple MacBook Pro computer equipped with a microphone and running Psyscope X. The experiment started with a training session including instructions and seven trials. As mentioned above, in order to avoid an effect of tense, the participants were told to imagine that all the events of the sentences happened the day before. When participants indicated that they were ready, the experiment began.

In each trial, the preamble appeared in black text at the center of the computer screen on a white background. The participants were instructed to repeat the preamble and then complete the sentence aloud. Next, they pressed a key to continue to the following screen, which displayed a signal (++++++) indicating that participants could pause on this screen until pressing a key to continue to the next trial. After pressing the key, there was a one-second delay that allowed the investigator to note the participants' responses on a log sheet. Throughout the experiment, the participant's voice was

recorded in a separate file in the computer. This recording was consulted whenever the investigator was not able to note the participant's response during the trial itself.

Design and Data Analysis

The verbs produced by the participants were entered into an Excel spreadsheet and coded as one or zero based on the singularity (1) or plurality (0) of the verbs. This gives us a proportion of the trials with grammatical but mismatching singular verb use.

Recall that the key question for this experiment is whether there is an effect of the intervening object argument in the production of subject-verb agreement. The dependent variable is the proportion of singular verbs out of all items. As already noted above, there were three independent, within-subject factors: Animacy (with two levels, animate vs. inanimate), Number (with two levels, plural with the suffix /-ha/ vs. singular), and Type of Plural Morpheme used for the animate subjects (with two levels, animate plural with the suffix /-an/ vs. animate plural with the suffix /-ha/).

Sets of Repeated Measures ANOVAs for each morpheme type (/ -ha/ and / -an/) were performed, with Object Animacy (animate vs. inanimate) and Object Number (singular vs. plural) as independent variables and participants (F1) and items (F2) as random variables. In addition, planned paired-sample *t*-tests were conducted. An alpha level of .05 was used for all statistical tests. One participant's data was excluded from analysis because the participant had difficulty performing the task in a timely fashion (she had been living in another state for two years before moving to Florida and had not had access to Iranian communities to use Persian). The remaining 45 participants' data were used in the analysis.

Results

First, an analysis of /-ha/ was conducted, with the following four conditions: APH, ASO, IPH and ISO, such that there were two independent factors, Object Animacy (Animate vs. Inanimate) and Object Number (Plural vs. Singular).

- APH: animate plural object with suffix /-ha/ (e.g. *æsb-ha*, *horse-PL*, 'horses')
- ASO: animate singular object with no suffix (e.g. *æsb*, *horse.SG*, 'horse')
- IPH: inanimate plural object with suffix /-ha/ (e.g. *mojæseme-ha*, *statue-PL*, 'statues')
- ISO: inanimate singular object with no suffix (e.g. *mojæseme*, *statue.SG*, 'statue')

This analysis revealed a main effect of Object Number ($F_1(1, 44) = 5.401$, $MSE = 0.020$, $p < 0.05$; $F_2(1, 39) = 0.4291$, $MSE = 0.022$, $p < 0.05$), with participants producing significantly more singular verbs when the object was a singular noun. There was no effect of Animacy ($F_1 < 1$, $F_2 < 1$) nor an interaction between Animacy and Number ($F_1 = 1.928$, $F_2 < 1$). This shows that the animacy of the intervening object nouns did not have any effect on the production of singular or plural form of the verbs that the participants produced. These results are reflected in Tables 7-2 and 7-3.

These results indicate that the Number feature of the object noun produces an attraction effect in optional subject-verb agreement in Persian and that under nearly equal conditions with inanimate plural subjects, speakers produced more singular verbs when the objects of the sentences were singular rather than plural and marked with the suffix /-ha/. In other words, the participants used fewer singular verbs in APH and IPH conditions, compared to ASO and ISO conditions. On the other hand, the lack of a

significant effect of Animacy suggests that the animacy of the object noun alone is not a factor in optional subject-verb agreement.

Next, the following four conditions (ASO, ISO, APN, IPH) were compared, with that same two independent variables as before, but with /-an/ instead of /-ha/.

- APN: animate plural object with suffix /-an/ (e.g. *æsb-an*, *horse-PI*, 'horses')
- ASO: animate singular object with no suffix (e.g. *æsb*, *horse.SG*, 'horse')
- IPH: inanimate plural object with suffix /-ha/ (e.g. *mojæseme-ha*, *statue-PL*, 'statues')
- ISO: inanimate singular object with no suffix (e.g. *mojæseme*, *statue.SG*, 'statue')

In this case, the analysis again revealed a significant main effect of Object Number ($F_1(1, 44) = 15,754$, $MSE=0.021$, $p < 0.01$; $F_2(1, 39) = 14,421$, $MSE= 0.021$, $p < 0.01$) showing that participants produced more singular verbs with inanimate plural subjects when the objects were singular. Additionally, while there was again no main effect of Animacy ($F_1 < 1$, $F_2 = 1.519$), indicating that animate and inanimate object nouns had the same impact on participants' use of singular and plural verbs overall, there was, however, a significant interaction of Animacy and Number ($F_1(1, 44) = 7,366$, $MSE=0.023$, $p < 0.01$; $F_2(1, 39) = 4,586$, $MSE = 0.033$, $p < 0.05$), unlike in the case of /-ha/. This interaction shows that participants' provided significantly less singular verbs when the object was an animate plural noun with suffix /-an/ (e.g. *æsb-an*, *horse-PI*, 'horses') compared to when it was an inanimate singular noun (e.g. *mojæseme*, *statue.SG*, 'statue'). There was not such a meaningful interaction of Animacy and Number in the previous comparison, when the APH (animate plural with suffix /-ha/) was

among the conditions. This result shows the effect of morphology- the difference between APN (animate plural with suffix /-an/) and APH (animate plural with suffix /-ha/). These results are reflected in Tables 7-4 and 7-5.

The interaction of Animacy and Number is more evident in Table 7-6, in which the proportion of singular verb usage broken down by condition is shown. The proportion of singular verb usage was much higher for APH (0.24) rather than with APN (0.16). This is the main effect of morphology (using different plural suffix for animate plural subjects in almost equal condition).

A pairwise comparison of plural morphemes /-ha/ and /-an/ was conducted and the results showed that the difference was significant. APH $t(1, 44) = 7.248, P < 0.01$. APN $t(1, 44) = 5.965, P < 0.01$. The results are shown in Table 7-7.

Discussion

These results indicate that the number of object nouns plays a significant role in the selection of singular vs. plural forms of the verbs. But, while the animacy of the subject influences subject-verb agreement patterns in Persian, this experiment shows that the animacy of the object does not have a significant impact on the selection of the singular or plural forms of the verb. Further, comparing the results of plural morpheme markers /-ha/ and /-an/, and in particular the interaction of animacy and number above present for /-an/ marked plurals but not for /-ha/ marked plurals, indicates that the attraction effect of plural animate objects with suffix /-ha/ (APH) are different from the attraction effect of plural animate objects with suffix /-an/ (APN). This suggests that animate plural objects with suffix /-ha/ do not cause attraction for subject-verb agreement. However, animate plural objects with the suffix /-an/ were shown to cause a significant attraction effect for agreement: in nearly identical conditions, the participants

produced less singular verbs with inanimate plural subjects when the object was animate plural with suffix /-an/ than when the object was animate plural with suffix /-ha/.

This finding suggests an important effect of morphology (using a different plural suffix for intervening animate plural object nouns) in the optional subject-verb agreement in Persian. Crucially, the effects seen here appear to be morphological in nature rather than purely syntactic. The animate plural object nouns with the suffixes /-ha/ and /-an/ are syntactically the same but morphologically different, with the plural suffix /-ha/ being unmarked and used for all types of plural nouns while the plural suffix /-an/ used only for animate nouns.

In fact there are two points. First, this study shows the attraction effect of the number feature of an object noun as a non-subject argument in subject-verb agreement. Second, the study shows the attraction effect of morphology (specific type of plural morpheme used for animate nouns). These effects are not purely syntactic. That is, both syntactic information (plurality of object noun) and morphological information (animacy) of the object noun and the effect of the specific plural morpheme are involved. The fact that these patterns in morphological marking could influence agreement is most consistent with the Constraint-based account in which additional, non-syntactic factors like animacy and patterns of co-occurrence with animacy (such as the case of /-an/) of a non-subject argument may influence agreement.

As explained in Chapter 2, one of the advantages of the Constraint account is its ability to explain the attraction effect in the same framework as it does for normal agreement. The Constraint view explains that “canonical” agreement is the situation in which the semantic and grammatical constraints happen within the normal range for

agreement (based on the meaning, structural distances, and morphological cues). But, variations such as attraction happens if the semantic, structural, or morphological constraints are outside the normal, usual range of values.

The results of this experiment cannot be explained by Minimalist approach and the more recent Control account as these accounts give a special role to syntactic properties. In these accounts, agreement is considered to be “the transmission of features within syntactic structures”. According to these views, the subject gets its number feature from the message. Then, the number feature of the subject is transmitted to the verb and there is no other syntactic mediation between them. This means that the subject number controls the verb number. So, the subject is the agreement controller and the verb is the agreement target. Because these approaches encapsulate the subject from other syntactic features of the sentence but outside the subject phrase, they cannot explain the attraction effect of phrases outside of the subject phrase on the subject-verb agreement. So, they cannot explain the attraction effect of direct object nouns in the optional subject verb number agreement evidenced in Persian.

According to the maximalist view, each of the two elements (e.g. subject and verb) involving in the agreement relation express some information about the relation. Through unification, the information of these two involving elements is merged and create the agreement relation. Importantly, unification of features can explain the result of this experiment. Based on this view, features are unified (they are not copied or transported from one element to another) and, as a result, they can be shared by elements of different branches of the tree structure. This point is particularly useful

when thinking about subject-verb agreement in Persian because it involves syntactic and non-syntactic features of involving and non-involving elements of the agreement.

Conclusion

In this study, the attraction effect of the object noun in subject-verb agreement was tested. The SOV word order of Persian and its optional subject-verb number agreement (for the inanimate plural subject nouns) created an exceptional condition to test the effect of intermediary object arguments in the optional subject-verb agreement (where all the materials were grammatical sentences and there was no need to use elicitation of errors).

There were three factors: Number, Animacy, and Morphology. As was predicted, the results of the study showed that the singularity vs. plurality of the produced verbs was affected by the singularity vs. plurality of the intermediary objects. More specifically, the participants produced more singular verbs when the objects were singular and more plural verbs when the intervening objects were plural. But, contrary to the predictions, the results did not show an attraction effect for object animacy: participants produced a similar range of singular verbs when the objects were singular animate/inanimate nouns as when they were plural animate/inanimate nouns with the unspecific suffix /-ha/. Finally, the experiment showed an effect of morphology: participants produced fewer singular verbs when the local animate plural object nouns were suffixed with the animate specific plural morpheme /-an/ rather than with the unspecific plural morpheme /-ha/.

The first and final result- the attraction effect of object noun; the effect of number and morphology (because of the specific type of morpheme) support the Constraint account which argues that semantic, morphological, and syntactic information influence

agreement during grammatical encoding and the agreement is not governed solely by syntactic information. Also, the subject verb agreement can be affected by the attraction effect of a noun phrase/local noun outside the subject phrase.

Table 7-1. Sample preamble and possible response for each condition

Condition	Preamble					Possible response					
APN	wagon-ha	æsb-an	Ro	Hæml	.....	wagon-ha	æsb-an	ro	hæml	Kærd/	kærd-æn.
	wagon-PI	horse-PI	OM	carrying		wagon-PI	horse-PI	OM	carrying	did.3SG /	did-3PL
	<i>'the wagons carrying the horses.'</i>					<i>'the wagons carried the horses.'</i>					
APH	wagon-ha	æsb-ha	Ro	Hæml	.....	wagon-ha	æsb-ha	ro	hæml	Kærd/	kærd-æn.
	wagon-PI	horse-PI	OM	carrying		wagon-PI	horse-PI	OM	carrying	did.3SG /	did-3PL
	<i>'the wagons carrying the horses.'</i>					<i>'the wagons carried the horses.'</i>					
ASO	wagon-ha	æsb	Ro	Hæml	.....	wagon-ha	æsb	ro	hæml	Kærd/	kærd-æn.
	wagon-PI	horse	OM	carrying		wagon-PI	horse	OM	carrying	did.3SG /	did-3PL
	<i>'the wagons carrying ... the horse.'</i>					<i>'the wagons carried the horse.'</i>					
IPH	wagon-ha	mojæseme-ha	Ro	Hæml	.....	wagon-ha	mojæseme-ha	ro	hæml	Kærd/	kærd-æn.
	wagon-PI	statue-PI	OM	carrying		wagon-PI	statue-PI	OM	carrying	did.3SG /	did-3PL
	<i>'the wagons carrying the statues.'</i>					<i>'the wagons carried the statues.'</i>					
ISO	wagon-ha	mojæseme	Ro	Hæml	.....	wagon-ha	mojæseme	ro	hæml	Kærd/	kærd-æn.
	wagon-PI	Statue	OM	carrying		wagon-PI	statue	OM	carrying	did.3SG /	did-3PL
	<i>'the wagons carrying .. the statue.'</i>					<i>'the wagons carried the statue.'</i>					

Table 7-2. Test of within subject effect per participants (conditions: APH, ASO, IPH, ISO)

Source	Df	Mean Square	F	Sig.
Animacy	1	.007	.218	.643
Error(animacy)	44	.032		
Number	1	.106	5.401	.025
Error(number)	44	.020		
animacy * number	1	.025	1.928	.172
Error(animacy*number)	44	.013		

Table 7-3. Test of within subject effect per items (conditions: APH, ASO, IPH, ISO)

Source	Df	Mean Square	F	Sig.
Animacy	1	.006	.315	.578
Error(animacy)	39	.020		
Number	1	.095	4.291	.045
Error(number)	39	.022		
animacy * number	1	.022	.844	.364
Error(animacy*number)	39	.026		

Table 7-4. Test of within subject effect per participants (conditions: APN, ASO, IPH, ISO)

Source	df	Mean Square	F	Sig.
Animacy	1	.028	.975	.329
Error(animacy)	44	.029		
Number	1	.334	15.754	.000
Error(number)	44	.021		
animacy * number	1	.168	7.366	.009
Error(animacy*number)	44	.023		

Table 7-5. Test of within subject effect per items (conditions: APN, ASO, IPH, ISO)

Source	Df	Mean Square	F	Sig.
Animacy	1	.025	1.519	.225
Error(animacy)	39	.016		
Number	1	.297	14.421	.000
Error(number)	39	.021		
animacy * number	1	.149	4.586	.039
Error(animacy*number)	39	.033		

Table 7-6. Mean proportion of singular verb usage with different verb groups

Condition	Number	Number Marking	Animacy	Mean	StErr
APN	Plural	/-an/	Animate	.164	.034
APH	Plural	/-ha/	Animate	.239	.033
ASO	Singular	∅	Animate	.311	.034
IPH	Plural	/-ha/	Inanimate	.250	.035
ISO	Singular	∅	Inanimate	.275	.031

Table 7-7. Pairwise comparison of plural morphemes /-ha/ and /-an/

		Mean	Std. Deviation	Std. Error Mean	t	df	Sig. (2-tailed)
Pair 1	APH – APN	.07500	.21716	.03237	2.317	44	.025

CHAPTER 8 CONCLUSION AND DISCUSSION

Overview

This dissertation presents a psycholinguistic study of subject-verb number agreement production in Persian. As previously discussed, verbs in Persian, similar to many other languages, conjugate for three persons and two numbers, singular and plural. So, there is subject-verb number and person agreement in this language. But, Persian has an exception: subject-verb number agreement is optional when the subject of the sentence is an inanimate plural noun. In this case, the related verb can be either singular or plural. While Persian grammarians and linguists have suggested that factors such as the conceptualization of subject nouns, verb tense or type of the verb could be influential in the selection of the singular or plural form of the verb, no systematic study has previously tested the effects of these potential factors in agreement.

Additionally, while the factors that influence subject-verb number agreement have been tested experimentally in other languages, Persian has a number of characteristics that make it an informative case: First, subject-verb agreement studies in other languages have necessarily required the elicitation of errors and attraction effect techniques to test the effect of syntactic and non-syntactic factors in agreement. Thus, the stimuli in these experiments were sometimes ambiguous sentences and the analyzed data were ungrammatical sentences with agreement errors. The optionality of subject-verb number agreement in Persian offers an excellent opportunity to study subject-verb number agreement using grammatical Persian sentences. There is no need to elicit agreement errors and use ungrammatical sentences and agreement errors as

data because both matched (plural form) and mismatched (singular form) verbs are grammatical and acceptable.

The second useful characteristic for Persian concerns the type of task that can be used: previous studies in agreement have used a completion task in which participants were provided with a series of sentence preambles that they repeated before completing with their own words. Participants were free to complete the sentence with any verb/structure, but using different verbs/structures could be an interfering factor in the experiments, affecting agreement errors. Using compound verbs of Persian gives us a golden opportunity to avoid this potential nuisance variable. In my experiments, the non-verbal part of compound verbs (as a part of the preambles) were given to the participants so that they were unknowingly restricted to using a specific verb to complete the preamble. Thus, I was able to specifically test the effect of verb type in agreement and keep the effect of verb type constant across experiments.

Third, previous studies have tested the effect of morphology in agreement using irregular/invariant plural nouns, but sometimes because of the properties of the language they could not test this factor alone (i.e. they had to mix this factor with another factor such as gender). Again, Persian has a property which can be very helpful to test the effect of morphology. Having two plural morphemes, /-ha/ (for all nouns) and /-an/ (specifically for animate nouns), provided an excellent opportunity to test the effect of morphology in agreement.

Finally, previous studies have tested attraction effects of local nouns, but in most of these experiments, the local noun was a noun phrase of a prepositional phrase modifying the subject head noun (thus, the local noun was a part of the subject phrase).

In some experiments, the local noun was a noun phrase in a subject-modifying relative clause. In a few other experiments in languages like French, the local noun was an object clitic pronoun (not noun) located between the subject noun and the verb. In fact, the word order of the studied languages in these experiments was SVO and thus researchers could not test the intervening attraction effect of an object noun as a local noun. Persian, like any SOV language, can be useful because the word order of unmarked sentences is SOV, and so the object falls naturally between the subject and verb. This provides a way to test the attraction effect of objects in optional subject-verb agreement.

The goal of this dissertation was to test the effect of probable factors in optional subject-verb number agreement in Persian. This was accomplished through five experiments presented in Chapters 3-7. In this concluding chapter, I will now summarize and discuss the results of these experiments, and then discuss the bigger picture that these results provide with regard to our understanding of subject-verb agreement.

Experiment 1

The first experiment, (presented in Chapter 3) had two main goals and an ancillary goal: First, the acceptability of sentences with matched (plural) and mismatched (singular) verbs was tested. More specifically, the effect of Verb Type, Verb Tense, and Verb Number in the acceptability of sentences with mismatched verbs was tested. For the second goal, the relationship between the acceptability of a mismatched verb form with the perceived thematic role of the subject (role interpretation) was tested. Again, effects of Verb Type, Verb Tense, and Verb Number were tested. Finally, the materials of this experiment were the complete versions of the sentence preambles used in Experiment 2 (Chapter 4), which allows us to compare acceptability with production.

First, verb tense did not show any significant effect on the acceptability of number mismatch or the interpretation of the role of the subject nouns.

Acceptability showed the effect of verb number in accepting sentences with matched and mismatched verbs. All the sentences with matched verbs in different groups were accepted but a different proportion of mismatched verbs were accepted for different verb groups. This is consistent with the effect of verb number in role interpretation; patient roles are more likely to be perceived for the subjects of sentences with mismatched verbs across different verb groups.

For the effect of verb type, the results of role interpretation did show a significant effect of verb type: verbs of different types caused participants to interpret different thematic roles for the subject nouns of the sentences. These results allowed me to classify the verb types into the following categories: (1) verbs type A with “patient like” subjects, (2) verb types B, C & D with agent like subjects, (3) verb type E with agent subjects, and (4) verb types F & H with patient subject.

Analysis of the acceptability rates, matched against these role interpretation results, showed that all of the sentences with plural (i.e. matched verbs) were accepted. Analysis of the mismatched verbs showed that the type of verb had a significant effect on participants’ acceptance rate. More than 90% of the sentences with mismatched (singular) verbs were judged acceptable with verbs in which subjects had a patient thematic role or no thematic role (with “verb of auxiliary be”). This contrasts sharply with almost no accepted mismatched verbs with verbs that assign agent thematic roles to their subjects. An interesting in-between category, verbs of emission and verbs of instrument, had high rates of acceptability (75%-80%).

These results suggest that when plural subjects have the role of agent, comprehenders disprefer agreement mismatch, and conversely, accept more mismatched verbs with patient or patient-like subjects. They are also more likely to perceive patient or patient-like thematic roles for the subject of sentences with a mismatched verb. These results thus show that the acceptance of sentences with mismatched verbs is much easier if the verbs of the sentences assign patient, patient-like or no role to their subject nouns rather assigning agent or agent-like roles, establishing that subject thematic role affects subject-verb agreement in Persian.

There may actually be historical reasons for the effect of the effect of verb type and its thematic role. In classic Persian, only singular verbs were used for the inanimate plural subject noun unless the nouns were used metaphorically and were personified for an action that only animate beings could do. With the development of modern technology, inanimate objects now appear to do many activities on their own. So, in our daily conversation sentences, these inanimate objects are not the “instrument” of actions but they are “intermediary instruments” used as sentential subjects. This is especially true for transportation instruments.

(8.1) The elevator went up.

(8.2) The helicopter turned around.

(8.3) The computer works fast.

So, the speaker and comprehenders may consider them as the agent of the sentences, either because there is no agent for the action or the role of the agent is not reflected in the sentence.

The same is true for the subjects of verbs of emission. Although the subject nouns do not voluntarily do the action, there is no other agent implied in the activity. So, the reader and comprehenders may consider them to be the agent of the sentence and thus do not accept the mismatched (singular) form of the verb for them.

(8.4) The lamps gave light.

(8.5) The glasses gleamed.

(8.6) The electrical cords spark.

Determining an agent role for the subjects of verbs of emission, verbs of instrument, and even verbs of entity-specific inchoative verbs (e.g. *below*) is not a definite (yes or no) task. It is relative. It can depend on the comprehender's conceptualization of the sentence. They may consider them to be "agent like" or they may think that they are not doing the action by themselves (e.g. for subjects of instrument verbs) or think that they are not doing any action (it is in their nature).

(8.7) The iron rusted.

(8.8) The seeds grow.

The results of Experiment 1, showing that participants accept a mismatched (singular) form of the verb in optional subject-verb number agreement depending on the thematic role that the verb assigns to its subject, demonstrating the impact of a semantic factor and thus are consistent with the maximalist approach and constraint-based view in which semantic factors may influence agreement during grammatical encoding.

Experiment 2

As was discussed in Chapter 4, the effects of verb type and verb tense in the production of optional subject-verb number agreement were tested in a completion task experiment. So, there were two factors: Verb Type (in eight groups) and Verb Tense

(present vs. past). Participants were requested to read a series of preambles in two lists and complete the sentences with their own verbs imagining that the events happened the day before or on the same day. The materials of this experiment were preambles consisting of the subject head noun and non-verbal part of eight different types of combined compound verb (i.e. the beginning part of the complete sentences used in Experiment 1).

Similar to Experiment 1, the results showed a significant effect of verb type: the participants produced the highest proportion of mismatched verbs with verb groups that assign patient roles or no role to their subject nouns. More specifically, the participants produced almost similar portion of mismatched (singular) verb (32% to 38%) with the verbs in groups (A, B, F, and H) with patient subjects and group G (with stative auxiliary “be” and no role for the subject). But, they produced lower proportions of mismatched verbs from the other verb groups that had subjects with roles other than patient: 17% with the “verbs of emission” (group C), 6% with the “verbs of instrument” (group D), and almost no mismatched verbs were produced with the “verbs of agent” (group E).

These results show that the type of verb, and in particular the thematic role assigned to subjects influences the production of optional subject-verb agreement. This result is fully consistent with the results from Experiment 1: the participants in Experiment 2 produced more mismatched verbs in sentences with patient subject compared to sentences with subjects of verbs of emission or instrument, and produced no mismatches for verbs of agency. This shows that the participants prefer to produce mismatched verbs only for non-agent subjects. The results of Experiment 1 showed the same effect of verb type: participants accepted more mismatched verbs in sentences

with patient subjects and none or almost none in sentences with agent or agent-like subjects. Also, they perceived more patient thematic role for the subject of sentences with mismatched verbs. Taken together, these results show a remarkable consistency between the influence of thematic role in the production and comprehension of subject-verb agreement.

One difference between Experiments 1 and 2 is that verb tense had a significant effect in the production of optional agreement in Experiment 2: participants produced more mismatched verbs in the past tense compared to the present tense. However, in Experiment 1 the (present or past) tense of the verbs did not cause participants to accept more sentences with mismatched verbs in any verb group, nor did it cause participants to perceive more patient role for the subjects of any verb groups. But, these results are not necessarily conflicting. For example, it could be possible that the effect of the verb tense is not as strong as verb type, or that its influence is limited to production. However, it is important to realize that while the effect of verb tense is only seen in production of agreement as a “preference” to use mismatched verbs more with past tense rather than present, this does not signal that participants would actually reject present-tense sentences with mismatched verbs or would perceive different roles for subject nouns in sentences with present or past tense with mismatched verbs. That is, while Persian speakers are affected by verb tense to produce more mismatched verbs with past tense, the data from Experiment 2 does not show that speakers reject present-tense sentences with mismatched verbs, simply that they do not tend to produce them.

While it is not clear why verb tense has the effect it does in the production of agreement, one possibility is suggested by Lotfi’s (2006) assertion that “autonomy in

action is more viable when the course of events has not come to an end yet". This means that the entities of the inanimate plural subject noun might seem to be more agent like and have control on their action when the tense of the verb is not past. On the contrary, they are considered the acted-on of the events when the verb is past tense and the event is finished. The results of role interpretation did not show this effect; the participants did not indicate more patient roles for subjects of past tense sentences compared to present tense ones. It could be possible that entities of subject nouns are conceptualized as individuals in sentences with present or future tense but as a unit in the past tense. A further study to investigate the degree of conceptual "autonomy" of sentences with present and past tense verb is recommended.

So, the results of Experiment 2 are consistent with those from Experiment 1: Participants produced more mismatched forms of the verb in the sentences that they were mostly to rate as acceptable with mismatched. Together, they strongly suggest that participants prefer mismatched verbs only for non-agent subjects.

Again, these results are compatible with the view that in classic Persian, only singular verbs were used with inanimate plural subject nouns unless the nouns were used metaphorically and they were personified for an action that only animate beings could do. But, today, it seems that the inanimate objects do some activities by their own. This is reflected in our language. They are not instrument (e.g. *they turned around by the helicopters*) but they are intermediary instruments used as subject of the sentence (e.g. *the helicopters turned around*). This implies that the inanimate subjects are considered as agent of the action. Persian speakers have generalized this for the subjects of verbs of emission (e.g., *The lamps give light.* or *The glasses are gleaming*). Although the

subject nouns do not voluntarily perform the action, Persian speakers consider them an agent of the sentence and prefer not to use mismatched (singular) verbs for them.

Again, similar to the judgment task, I believe that Persian speakers use the mismatched form of the verb for the inanimate subject nouns whose thematic role is not “agent-like”. Using matched or mismatched verbs in verbs of emission and instrument verb sentences depends on the speakers’ conceptualization of the subject of the sentence. They may consider them to be “agent-like” or they may think that they are not doing the action by themselves (for subjects of instrument verbs) or think that they are not doing the action or the action is in their nature (the verbs of emission). This interpretation means that it is the comprehender or speakers’ conceptualization of the subject role that causes them to accept or produce mismatched verbs with inanimate plural subject nouns that do not have a definite agent or patient role. If their conceptualization of the plural inanimate subject noun is “agent-like”, they prefer not to use the mismatched verb. On the contrary, if their conceptualization is “patient like”, they feel free to accept or use mismatched verb.

Experiments 1 and 2 were highly related, but Experiments 3, 4, and 5 test different factors. As I will address more below, the results in Chapters 3 and 4 clearly also signal the importance of semantic factors and are consistent with a constraint-based, maximalist approach in which, in addition to syntactic information, other factors including semantic factors influence agreement during grammatical encoding and that agreement is not governed solely by syntactic information.

Experiment 3

Experiment 3 tested the effect of unity vs. individuality of the entities of inanimate plural subject nouns in optional subject-verb number agreement. The materials of this

completion task included preambles with an inanimate subject head noun, a modifying prepositional phrase, and the nonverbal part of the compound verb.

Using the effect of '*spatial separation vs. spatial collection*', I investigated the effect of collective and distributive conceptualization of the subject on the form of the produced verbs. The Individuality vs. Unity of the subject entities were manipulated by using different prepositions with the modifiers of the inanimate plural subjects. The preambles were one of two similar structures; passive or inchoative auxiliary. In order to test the effect of the plurality of the local noun, the number of the local noun were manipulated. So, there were three types of modifying prepositional phrase: Individualized Plural, Unified Plural, and Unified Singular.

The results of this study showed that type of the prepositional phrase had a significant effect on the production of mismatched verbs: participants completed the preambles with more mismatched verbs in sentences with unified prepositional phrases compared to individualized prepositional phrases. Comparing the proportion of the mismatched verbs produced in sentences with unified singular and unified plural prepositional phrases also showed a small attraction effect for local nouns.

Similar to the results from Experiments 1 and 2, I believe that the conceptualization of subject head noun is the crucial factor here. Grammatically, the subject head nouns of the sentences are plural nouns, but they can have matched (plural) or mismatched (singular) verbs. This experiment showed that the selection of the verb depends on whether the speakers conceptualize the entities of the subject nouns as a unit or as individuals. If they conceptualize the subject nouns as a unit, they produce simple verbs, but if they conceptualize them as individuals then they use plural nouns.

This result, similar to the results of the previous experiments, supports the constraint-based, maximalist approach, as both conceptual and syntactic information influence agreement and thus agreement in Persian is clearly not governed solely by syntactic information.

Experiment 4

In Experiment 4, the effect of concreteness vs. abstractness of subject nouns in subject-verb number agreement was tested. The preambles of this completion task consisted of an inanimate plural subject head noun and the non-verbal part of the compound verbs in passive and inchoative auxiliary structures. The results of this study showed that the concreteness vs. abstractness of the subject nouns was a significant factor in agreement, as participants produced significantly more mismatched verbs with abstract subject nouns compared to concrete ones.

This result resembles the subject conceptualization results of Experiment 3: When the subjects of sentences are concrete entities, it is easier for speakers to conceptualize them as individual entities and not use mismatched verbs for them. But, speakers use more mismatched verbs when the subjects of the sentences are abstract nouns. In this case, the speakers do not conceptualize the subject entities as multiple entities - in fact the abstract nouns are not multiple entities; we have arbitrarily used plural morphemes for them as we do for the concrete nouns. This is somehow similar to the grammatical gender (feminine or masculine) used for nouns in languages which have gender. I believe that abstract plural nouns are mostly conceptualized as a unit (their conceptual meaning) and not individualized entities (their grammatical form). However, in this dissertation I did not test the participants' conceptualization of the abstract noun directly, for example using a judgment task to test whether participants consider the plural

abstract nouns as a unit or individual. A future study would be helpful to confirm whether the conceptualization of abstract plural noun is like a unit or individual entities.

Again, similar to the other experiments in this dissertation, the effect of abstractness vs. concreteness of subject nouns is the most consistent with the constraint-based, maximalist approach that supports the idea that in addition to syntactic information, other factors (including semantic factors) influence agreement.

Experiment 5

In Experiment 5, the attraction of intermediary main object nouns in optional subject-verb number agreement was tested. In this experiment, participants read preambles that consisted of an inanimate plural subject noun, an animate/inanimate singular/plural object noun, direct object marker, and the non-verbal part of a compound verb. They then completed the sentences with a verbal part of the compound verbs. The effects of three features of the object were tested: number, animacy, and morphology (comparing the attraction effect of two different plural morphemes used to mark the animate plural objects nouns).

The results of this experiment showed that the number feature was effective: participants produced more mismatched (singular) verbs when the intermediate object was singular and vice versa. While the animacy of the object noun was not influential, there was an effect of morphology: Participants produced fewer mismatched (singular) verbs when the plural suffix of the intermediary animate plural object nouns was /-an/ rather than /-ha/. These results show that intermediary main object nouns may serve as attractors in optional subject-verb number agreement.

The first result, the attraction effect of the intermediary object noun (in SOV) sentence, is important because it shows an attraction effect of a local noun outside of the

subject noun phrase and not in a subordinate clause. Previous studies have tested the attraction effect of local nouns modifier of the subject noun phrase (e.g. example 8.1, Bock & Miller 1991), the noun phrase of a relative clause post modifier of the subject phrase (example 8.2, Bock & Cutting 1992), or the cliticized object which is the intermediary object pronoun (example 8.3, Franck, Soare, Frauenfelder, Rizzi 2009).

(8.9) the key(s) to the cabinet(s)...

(8.10) the report that they controlled the forest fire(s) ...

(8.11) Le sénateur *les* RECOIT
 The senator *them* RECEIVES
 ‘The senator RECEIVES them’

On the other hand, Hartsuiker, Antón-Méndez, & van Zee (2001) did tested the attraction effect of intermediary object noun in complement clauses in Dutch. No study has tested the attraction effect of main object nouns in subject-verb agreement. The unmarked SOV word order of Persian language provided this opportunity to test the effect of an intermediary object. Also, the optionality of subject-verb number agreement in Persian enabled me to test the attraction effect of main object nouns in grammatical Persian sentences (not using elicitation of errors or the ambiguous target sentences).

The result for the effect of morphology here is very interesting, because the participants have produced different forms of the verbs to complete two preambles which are exactly the same (inanimate plural subject noun, animate plural object noun, direct object (accusative) marker, and non-verbal part of the compound verb) except for the plural morpheme of the intermediary object. In one preamble the plural suffix was /-an/

used specifically for animate nouns and in the other preamble, the plural suffix marker was /-ha/ used for all animate or inanimate nouns.

The results of Experiment 5 support the constraint-based account, which is able to explain attraction effects in the same framework as it does for regular, error-free agreement. The Constraint-based view argues that “canonical” agreement is the situation in which semantic and grammatical constraints apply within the normal range for agreement (that is, normal, error-free agreement takes place because the cues align). But, variations like attraction happen if the semantic, structural, or morphological constraints are outside the normal domain. In the case of the attraction effects for object nouns seen in this dissertation (i.e. the effect of number and different plural morphemes of object), both syntactic and morphological factors of an element outside the scope of subject and verb have influence agreement during grammatical encoding and so this supports the idea that agreement is not governed solely by syntactic information.

Taken together, the results of the experiments of this dissertation showed effects verb type and the thematic role that verbs assign to their subject nouns, verb tense, conceptualization of entities of subject nouns as a unit or individuals, concreteness/abstractness of the subject noun, and attraction for intervening main object nouns in optional subject-verb number agreement. These factors all caused Persian native speakers to produce different proportions of mismatched but grammatical verbs to complete sentences.

These results clearly establish the effect of both syntactic and non-syntactic factors in the optional subject-verb number agreement of Persian. More specifically, they show that non-syntactic information of the verb, subject and even the intervening object

can affect the number agreement. To reiterate, we saw that verb number, verb tense and the thematic role it assigns to the subject were influential, as was the conceptual information of the subject noun such as its unity and concreteness. The attraction effect of object noun (the effect of number feature of object noun) shows that subject-verb agreement is not syntactically insulated: The number feature of a local noun outside the subject phrase can cause Persian speakers to produce sentences with matched or mismatched verbs. Finally, the effect of morphology (use of specific plural morpheme with the intervening object) shows the effect of morphology factors of a noun phrase outside of the subject noun phrase; the object noun with the object marker /ro/.

Considering the exceptional characteristics of Persian mentioned at the beginning of this chapter including optional subject verb number agreement and having grammatical sentences as the data of the analysis, SOV word order, use of compound verbs, and different plural markers will increase the value of the results acquired by the experiments. The data of this dissertation are a good source for the models of language production and processing.

Finally, I want to show how a constraint-based model would specifically account for the results of the experiments of this dissertation on optional subject-verb number agreement. In this framework, computing agreement is not the product of copying the number feature of the subject noun phrase onto the verb. It is a constraint-based process in which multiple cues are integrated in the production of the inflected verb form. In addition to syntactic factors, type of the verb and the thematic role it assigns to its subject, verb tense, conceptualization of the entities of the subject noun (as a unit or as

individuals), number and type of plural morphemes of the intervening object noun are among the effective constraints.

In this framework, there are two levels. The speaker's Message is the origin of notional number. The number features of the subject and the verb are parallel, independent products of the same information at the Message. This means that both subject and verb get their number features from the semantic structure independently and the number feature of the verb is not copied from the subject. The source of the number feature on the verb and the number feature on the subject is the same but the subject and verb may inflect different number features as subject and verb are affected by different constraints at Functional level. For example, the subject noun may get a plural number feature because the notional meaning of the entities in the message is "more than one". But the verb may inflect singular or plural inflection from the same message depending on whether the entities of the subject noun are conceptualized as a unit or individuals (the effect of unity vs. individuality and concreteness vs. abstractness of subject nouns). Also, the number inflection of the verb may be singular or plural depending on the type of the verb. Crucially, there can be more than one factor pushing the verb inflection to be singular, for example if the verb assigns patient role (not agent role) to its subject noun and the action has happened in the past tense rather than present tense. And finally, the number inflection of the verb may be singular or plural depending on the number of the intervening object nouns and the type of the plural morpheme it has.

In this way, for subject-verb number agreement in Persian employs both grammatical mechanisms and number semantics interact to create agreement. If the

resulting number features in subject and verb are the same, then the product is a matched agreement. But, if the number inflection on the verb is different from the number feature of the subject noun (e.g. mismatched agreement) , a bidirectional reconciliation mechanism (such as unification) will happen to align the different features.

So, each of the above-mentioned factors in the Functional level will exert some influence over the computation of a verb's inflection. The grammatical mechanism has the main role because subject-verb agreement is obligatory for all subject nouns except for those that are inanimate and plural. By the same logic, the animacy of the subject noun as a morphological factor can be considered to be the second important constraint because optional agreement is only for the inanimate (and not animate) subject nouns.

The effect of the conceptualization of the subject seems to be more important in abstract vs. concrete nouns compared to unity vs. individuality. In Experiment 3, the unity vs. individuality of entities of subject nouns were highlighted using spatial collection vs. spatial distributivity. So, in normal sentences, the effect of conceptualization may not be that effective.

The constraint coming from the verb type seems to be more significant than verb tense: the effect of verb tense was shown only in production (suggesting a preference to use more mismatched verbs with the past tense compared to present tense) but not in acceptance judgements (with a greater rate of rejection of mismatched verbs in the present tense). Conversely, the effect of verb type was present in both production and judgement tasks. The effect of verb type was significantly important; almost no mismatched verb was used with verbs of agency (although the subject were inanimate

nouns). So the effect of verb type seems to be more important than the effect of animacy of the subject.

For the attraction effect of main object nouns, the effects of number feature and different plural morphemes of intermediary object nouns on agreement seem to be less than the effect of different factors on the involving elements of the agreements (subject and verb).

Suggestions for Further Study

An eye-tracking study would be a good way to test the effects of the factors tested here in the comprehension of agreement. The results of eye-tracking could be very interesting because the target sentences are grammatical sentences with matched and mismatched verbs, and would be helpful for psycholinguistic theories models of language processing, because of the specific characteristics of Persian.

Experiment 2 showed the effect of verb tense in the production of agreement. I do not have any reason for this effect. Lotfi's (2006) suggests that the reason is the "autonomy in action" in a non-past tense. The results in Experiment 1 (role interpretation) did not show this effect, as the participants did not conceive more patient role for the subjects of past tense sentences comparing to present ones. So, a judgment task, testing the effect of verb tense in the volitional aspects of the subject noun for doing the action is recommended .

Experiment 5 of this dissertation tested the attraction effect of an intervening main object noun on optional subject-verb agreement. The object noun was [+specific, + definite] followed by an obligatory direct object marker /ra/. Considering the effect of the object marker, a completion task testing the attraction effect of [+specific, - definite] main object noun (i.e., without the direct object marker) is recommended. This study may

show a greater attraction effect of for the intervening object on subject verb agreement. Also, it may show the effect of animacy features in agreement.

Reviewing the experiments and their results, the difference between the proportion of mismatched verbs produced with verbs of instruments (group D, 0.081) in Experiment 2 (table 4-6) and the proportion of mismatched verbs in different verb conditions (APN, 0.161 – ISO, 0.275) in Experiment 5 (table 7-6) is interesting. The proportion of mismatched verbs produced with the intransitive verbs of instruments is much less than the proportion of mismatched verbs produced with the transitive verbs of instrument with different object condition. I do not have any reason for this difference. A study with transitive and intransitive verbs would be useful to compare the effects of verb transitivity on optional agreement.

APPENDIX A
GLOSS- JUDGMENT TASK

Table A-1. List of the stimuli for Judgment experiment (condition: Past Singular)

item	condition	VT	Stimuli	gloss		
1	past-SG	A	طناب ها گره خورد.	tænab-ha rope-pl the ropes became knotted. <i>the ropes became knotted.</i>	gere knot	xord collide.PAST.3SG
2	past-SG	A	زنجیر ها پیچ خورد.	zænjir-ha chain-pl the chains became twisted. <i>the chains became twisted.</i>	pich twist	xord collide.PAST.3SG
3	past-SG	A	درها رنگ خورد.	dær-ha door-pl the doors became painted. <i>the doors became painted.</i>	ræng paint	xord collide.PAST.3SG
4	past-SG	A	فرش ها خاک خورد.	færsh-ha rug-pl the rugs became dusty. <i>the rugs became dusty.</i>	xak dust	xord collide.PAST.3SG
5	past-SG	A	کتابخونه ها رونق گرفت.	ketab xune-ha library-pl the libraries flourished. <i>the libraries flourished.</i>	ronæq flourishing	gereft take.PAST.3SG
6	past-SG	A	دفتر ها باقی موند.	dæftær-ha notebook-pl the notebooks remained. <i>the notebooks remained.</i>	baqi left	mund remain.PAST.3SG
7	past-SG	A	سقفها فرو ریخت.	sæqf-ha roof-pl the roofs collapsed. <i>the roofs collapsed.</i>	foru down	rixt collapse.PAST.3SG
8	past-SG	A	گردوها غل خورد.	gerdu-ha walnut-pl the walnuts spun. <i>the walnuts spun.</i>	qel spinning	xord collide.PAST.3SG

Table A-1. Continued

item	condition	VT	Stimuli	gloss		
9	past-SG	A	بسته ها برگشت خورد.	bæste-ha package-pl the packages returned. <i>the packages returned.</i>	bærgæsht returning	xord collide.PAST.3SG
10	past-SG	A	کفش ها سر خورد.	kæfsh-ha shoe-pl the shoes slid. <i>the shoes slid.</i>	sor sliding	xord collide.PAST.3SG
11	past-SG	A	میوه ها هدر رفت.	mive-ha fruit-pl the fruits was wasted. <i>the fruits were wasted.</i>	hædær wasting	ræft go.PAST.3SG
12	past-SG	A	برگ ها تکان خورد.	bærg-ha leaf-pl the leaves swayed. <i>the leaves swayed.</i>	tekan swaying	xord collide.PAST.3SG
13	past-SG	A	سنگ ها فرو رفت.	sæng-ha stone-pl the stones sunk. <i>the stones sunk.</i>	foru sinking	ræft go.PAST.3SG
14	past-SG	A	تخته ها شناور موند.	taxte-ha board-pl the boards was floating. <i>the boards were floating.</i>	shenavær floating	mund remain.PAST.3SG
15	past-SG	B	لوبیابها جوانه زد.	lubia-ha bean-pl the beans sprouted. <i>the beans sprouted.</i>	jævane sprout	zæd strike.PAST.3SG
16	past-SG	B	میخکها گل کرد.	mixæk-ha carnation the carnations flowered. <i>the carnations flowered.</i>	gol flower	kærd do.PAST.3SG

Table A-1. Continued

item	condition	VT	Stimuli	gloss		
17	past-SG	B	ساقه ها برگ داد.	saqe-ha stem-pl the stems budded. <i>the stems budded.</i>	bærg leaf	Dad give.PAST.3SG
18	past-SG	B	دونه ها رشد کرد.	dune-ha seed-pl the seeds grew. <i>the seeds grew.</i>	roshd growing	kærd do.PAST.3SG
19	past-SG	B	طوفان ها فرو نشست.	tufan-ha storm-pl the storms subsided. <i>the storms subsided.</i>	foru subsiding	neshæst sit.PAST.3SG
20	past-SG	B	خمیر ها ور آمد.	xæmir-ha dough-pl the dough raised. <i>the dough raised.</i>	vær raising	amæd come.PAST.3SG
21	past-SG	B	دست ها ورم کرد.	dæst-ha hand-pl the hands swelled. <i>the hands swelled.</i>	væræm swelling	kærd do.PAST.3SG
22	past-SG	B	زخم ها جوش خورد.	zæxm-ha sore-pl the sores scabbed over. <i>the sores scabbed over.</i>	jush scabbing over	xord collide.PAST.3SG
23	past-SG	B	پاها تاول زد.	pa-ha foot-pl the feet blistered. <i>the feet blistered.</i>	tavæl blistering	zæd strike.PAST.3SG
24	past-SG	B	آهن ها زنگ زد.	ahæn-ha iron-pl the irons rusted. <i>the irons rusted.</i>	zæng rust	zæd strike.PAST.3SG

Table A-1. Continued

item	condition	VT	Stimuli	gloss		
25	past-SG	B	شاخه ها شکوفه کرد.	shaxe-ha branch-pl the branches blossomed. <i>the branches blossomed.</i>	shokufe blossom	kærd do.PAST.3SG
26	past-SG	B	جوانه ها غنچه کرد.	jævane-ha twig-pl the twigs budded. <i>the twigs budded.</i>	qonche bud	kærd do.PAST.3SG
27	past-SG	B	خیارها کپک زد.	xiyar-ha cucumber-pl the cucumbers molded. <i>the cucumbers molded.</i>	kæpæk mold	zæd strike.PAST.3SG
28	past-SG	B	گندمها ریشه کرد.	gændom-ha wheat-pl the wheat took root. <i>the wheat took root.</i>	rishe root	kærd do.PAST.3SG
29	past-SG	C	لامپها نور داد.	lamp-ha lamp-pl the lamps gave light. <i>the lamps gave light.</i>	nur light	dad give.PAST.3SG
30	past-SG	C	روزنامه ها خُش خُش کرد.	ruzname-ha newspaper-pl the newspapers rustled. <i>the newspapers rustled.</i>	xesh xesh rustling	kærd do.PAST.3SG
31	past-SG	C	آش ها قُل زد.	ash-ha porridge-pl the porridge bubbled. <i>the porridge bubbled.</i>	qol bubble	zæd strike.PAST.3SG
32	past-SG	C	آتشفشانها فوران کرد.	atæshfeshan-ha volcano-pl the volcanoes gushed. <i>the volcanoes gushed.</i>	fæværan gush	kærd do.PAST.3SG

Table A-1. Continued

item	condition	VT	Stimuli	gloss		
33	past-SG	C	بشکه ها نشست کرد.	boshke-ha barrel-pl the barrels oozed. <i>the barrels oozed.</i>	næsht ooze	kærd do.PAST.3SG
34	past-SG	C	سکه ها جرینگ جرینگ کرد.	seke-ha coin-pl the coins jingled. <i>the coins jingled.</i>	jering jering jingle	Kærd do.PAST.3SG
35	past-SG	C	بادها زوزه کشید.	bad-ha wind-pl the winds moaned. <i>the winds moaned.</i>	zuze moan	Keshid pull.PAST.3SG
36	past-SG	C	چراغها سو سو زد.	cheraq-ha light-pl the lights flickered. <i>the lights flickered.</i>	su su flicker	Zæd strike.PAST.3SG
37	past-SG	C	مته ها وزوز کرد.	mæte-ha drill-pl the drills buzzed. <i>the drills buzzed.</i>	vez vez buzz	Kærd do.PAST.3SG
38	past-SG	C	لیوان ها برق زد.	livan-ha glass-pl the glasses gleamed. <i>the glasses gleamed.</i>	bærq gleaming	Zæd strike.PAST.3SG
39	past-SG	C	سیم ها جرقه زد.	sim-ha cord-pl the electrical cords sparked. <i>the electrical cords sparked.</i>	jæræqe spark	Zæd strike.PAST.3SG
40	past-SG	C	اره ها سر و صدا کرد.	ærre-ha saw-pl the saws made noise. <i>the saws made noise.</i>	sær o seda noise	Kærd do.PAST.3SG

Table A-1. Continued

item	condition	VT	Stimuli	Gloss		
41	past-SG	C	پنجره ها تق تق کرد.	pænjære-ha window-pl the windows rattled. <i>the windows rattled.</i>	tæq tæq rattling	Kærd do.PAST.3SG
42	past-SG	C	دوربین ها فلاش زد.	durbin-ha camera-pl the cameras flashed. <i>the cameras flashed.</i>	felash flashing	Zæd strike.PAST.3SG
43	past-SG	D	فرستنده ها مخابره کرد.	ferestænde-ha beacon-pl the beacons transmitted. <i>the beacons transmitted.</i>	moxabere transmitting	kærd do.PAST.3SG
44	past-SG	D	دوربین ها عکس گرفت.	durbin-ha camera-pl the cameras photographed. <i>the cameras photographed.</i>	æks photo	gereft take.PAST.3SG
45	past-SG	D	هلیکوپترها چرخ زد.	helikupter-ha helicopter-pl the helicopters rotated. <i>the helicopters rotated.</i>	chærx rotating	zæd strike.PAST.3SG
46	past-SG	D	قایق ها فرار کرد.	qayeq-ha boat-pl the boats escaped. <i>the boats escaped.</i>	færar escaping	kærd do.PAST.3SG
47	past-SG	D	رادیو ها اطلاع داد.	radiyo-ha radio-pl the radios informed. <i>the radios informed.</i>	ettela information	dad give.PAST.3SG
48	past-SG	D	آسانسورها بالا رفت.	asansor-ha elevator-pl the elevators went up. <i>the elevators went up.</i>	bala up	ræft go.PAST.3SG

Table A-1. Continued

item	condition	VT	Stimuli	gloss		
49	past-SG	D	تاکسی ها دور زد.	taksi-ha taxi-pl the taxies turned around. <i>the taxies turned around.</i>	dowr round	zæd strike.PAST.3SG
50	past-SG	D	مته ها سوراخ کرد.	mæte-ha drill-pl the drills made a hole. <i>the drills made a hole.</i>	surax hole	kærd do.PAST.3SG
51	past-SG	D	وانت بارها قاچاق کرد.	vanet bar-ha truck-pl the trucks smuggled. <i>the trucks smuggled.</i>	qachaq smuggling	kærd do.PAST.3SG
52	past-SG	D	تانک ها حمله کرد.	tank-ha tank-pl the tanks attacked. <i>the tanks attacked.</i>	hæmle attack	kærd do.PAST.3SG
53	past-SG	D	پنکه ها خنک کرد.	pænke-ha fan-pl the fans cooled. <i>the fans cooled.</i>	xonæk cool	kærd do.PAST.3SG
54	past-SG	D	هواپیماها پرواز کرد.	hæva peima-ha airplane-pl the airplanes flew. <i>the airplanes flew.</i>	pærvaz flight	kærd do.PAST.3SG
55	past-SG	D	بلندگوها اعلام کرد.	bolændgoo-ha loudspeaker-pl the loudspeakers announced. <i>the loudspeakers announced.</i>	elam announcing	kærd do.PAST.3SG
56	past-SG	D	رادارها شناسایی کرد.	radar-ha radar-pl the radars identified. <i>the radars identified.</i>	shenasa'i identify	kærd do.PAST.3SG

Table A-1. Continued

item	condition	VT	Stimuli	gloss		
57	past-SG	E	باقلواها چشمک زد.	baqlava-ha baklava-pl the baklavas <i>the baklavas</i>	cheshmæk winking winked. <i>winked.</i>	zæd strike.PAST.3SG
58	past-SG	E	قابلمه ها تقلب کرد.	qablame-ha pot-pl the pots <i>the pots</i>	tæqælob cheating cheated. <i>cheated.</i>	kærd do.PAST.3SG
59	past-SG	E	مداد ها اخم کرد.	medad-ha pencil-pl the pencils <i>the pencils</i>	æxm frowning frowned. <i>frowned.</i>	kærd do.PAST.3SG
60	past-SG	E	جاروها راه رفت.	jaru-ha broom-pl the broom <i>the broom</i>	rah way walked. <i>walked.</i>	ræft go.PAST.3SG
61	past-SG	E	دیوارها سوت زد.	divar-ha wall-pl the walls <i>the walls</i>	sut whistling whistled. <i>whistled.</i>	zæd strike.PAST.3SG
62	past-SG	E	روسری ها لبخند زد.	rusæri-ha scarf-pl the scarves <i>the scarves</i>	læbxænd smiling smiled. <i>smiled.</i>	zæd strike.PAST.3SG
63	past-SG	E	عطرها گریه کرد.	ætr-ha perfume-pl the perfumes <i>the perfumes</i>	gerye crying cried. <i>cried.</i>	kærd do.PAST.3SG
64	past-SG	E	لوله ها ورزش کرد.	lule-ha pipe-pl the pipes <i>the pipes</i>	værzesh exercising exercised. <i>exercised.</i>	kærd do.PAST.3SG

Table A-1. Continued

item	condition	VT	Stimuli	gloss		
65	past-SG	E	خودکارها زانو زد.	xodkar-ha pen-pl the pens <i>the pens</i>	zanu kneeling kneeled. <i>kneeled.</i>	zæd strike.PAST.3SG
66	past-SG	E	بلندگوها موافقت کرد.	bolændgu-ha loudspeaker-pl the loudspeakers <i>the loudspeakers</i>	movafeqæt agreeing agreed. <i>agreed.</i>	kærd do.PAST.3SG
67	past-SG	E	گوجه ها فکر کرد.	goje-ha tomato-pl the tomatoes <i>the tomatoes</i>	fekr thinking thought. <i>thought.</i>	kærd do.PAST.3SG
68	past-SG	E	نخودها دعوا کرد.	noxod-ha pea-pl the peas <i>the peas</i>	da'va quarreling quarreled. <i>quarreled.</i>	kærd do.PAST.3SG
69	past-SG	E	کامپیوترها تعظیم کرد.	kamputer-ha computer-pl the computers <i>the computers</i>	ta'zim bowing bowed. <i>bowed.</i>	kærd do.PAST.3SG
70	past-SG	E	پنجره ها نرمش کرد.	pænjære-ha window-pl the windows <i>the windows</i>	jærmesh exercising exercised. <i>exercised.</i>	kærd do.PAST.3SG
71	past-SG	F	گلابیها خورده شد.	golabi-ha pear-pl the pears <i>the pears</i>	xorde eaten was eaten. <i>were eaten.</i>	shod become.PAST.3SG
72	past-SG	F	جوراب ها پوشیده شد.	jurab-ha sock-pl the socks <i>the socks</i>	pushide worn was worn. <i>were worn.</i>	shod become.PAST.3SG

Table A-1. Continued

item	condition	VT	Stimuli	gloss		
73	past-SG	F	داستان ها خوانده شد.	dastan-ha story-pl	xunde Read	shod become.PAST.3SG
				the stories was read. <i>the stories were read.</i>		
74	past-SG	F	دستمال ها خریده شد.	dæstmal-ha handkerchief-pl	xæride bought	shod become.PAST.3SG
				the handkerchiefs was bought. <i>the handkerchiefs were bought.</i>		
75	past-SG	F	دامن ها دوخته شد.	damæn-ha skirt-pl	duxte sewn	shod become.PAST.3SG
				the skirts was sewn. <i>the skirts were sewn.</i>		
76	past-SG	F	تپه ها دیده شد.	tæpe-ha hill-pl	Dide Seen	shod become.PAST.3SG
				the hills was seen. <i>the hills were seen.</i>		
77	past-SG	F	بشقابها شسته شد.	boshqab-ha plate-pl	shoste washed	shod become.PAST.3SG
				the plates was washed. <i>the plates were washed.</i>		
78	past-SG	F	قندان ها شکسته شد.	qændan-ha sugar bowl-pl	shekæste broken	shod become.PAST.3SG
				the sugar bowls was broken. <i>the sugar bowls were broken.</i>		
79	past-SG	F	چمدان ها فروخته شد.	chæmedan-ha suitcase-pl	foruxte Sold	shod become.PAST.3SG
				the suitcases was sold. <i>the suitcases were sold.</i>		
80	past-SG	F	توت فرنگی ها چیده شد.	tut færængi-ha strawberry-pl	chide picked	shod become.PAST.3SG
				the strawberries was picked. <i>the strawberries were picked.</i>		

Table A-1. Continued

item	condition	VT	Stimuli	gloss		
81	past-SG	F	ژاکت ها بافته شد.	zhaket-ha sweater-pl the sweaters was knitted. <i>the sweaters were knitted.</i>	Bafte knitted	shod become.PAST.3SG
82	past-SG	F	عینک ها شمرده شد.	einæk-ha eye-glass-pl the eye-glasses was counted. <i>the eye-glasses were counted.</i>	shomorde counted	shod become.PAST.3SG
83	past-SG	F	انگشترها فرستاده شد.	ængoshtær-ha ring-pl the rings was sent. <i>the rings were sent.</i>	ferestade Sent	shod become.PAST.3SG
84	past-SG	F	هویج ها پخته شد.	hævij-ha carrot-pl the carrots was cooked. <i>the carrots were cooked.</i>	Poxte cooked	shod become.PAST.3SG
85	past-SG	G	میزها چوبی بود.	miz-ha table-pl the tables was wooden. <i>the tables were wooden.</i>	chubi wooden	bud be.PAST.3SG
86	past-SG	G	مدادها قرمز بود.	medad-ha pencil-pl the pencils was red. <i>the pencils were red.</i>	qermez Red	bud be.PAST.3SG
87	past-SG	G	سیبها سفت بود.	sib-ha apple-pl the apples was crisp. <i>the apples were crisp.</i>	Seft Crisp	bud be.PAST.3SG
88	past-SG	G	گوجه ها تازه بود.	goje-ha tomato-pl the tomatoes was fresh. <i>the tomatoes were fresh.</i>	Taze Fresh	bud be.PAST.3SG

Table A-1. Continued

item	condition	VT	Stimuli	gloss		
89	past-SG	G	خانه ها دور بود.	xæne-ha house-pl the houses was far. <i>the houses were far.</i>	dur Far	bud be.PAST.3SG
90	past-SG	G	نرده ها فلزی بود.	nærde-ha fence-pl the fences was metallic. <i>the fences were metallic.</i>	felezi metallic	bud be.PAST.3SG
91	past-SG	G	پله ها سنگی بود.	pele-ha stair-pl the stairs was made of stone. <i>the stairs were made of stone.</i>	sængi made of stone	bud be.PAST.3SG
92	past-SG	G	صندلی ها چرمی بود.	sændæli-ha chair-pl the chairs was leather. <i>the chairs were leather.</i>	chærmi leather	bud be.PAST.3SG
93	past-SG	G	قیر ها سیاه بود.	qir-ha tar-pl the tar was black. <i>the tar was black.</i>	siyah black	bud be.PAST.3SG
94	past-SG	G	مدرسه ها نزدیک بود.	mædrese-ha school-pl the schools was near. <i>the schools were near.</i>	næzdik Near	bud be.PAST.3SG
95	past-SG	G	تخت ها بزرگ بود.	tæxt-ha bed-pl the beds was big. <i>the beds were big.</i>	bozorg Big	bud be.PAST.3SG
96	past-SG	G	برفها سفید بود.	bærf-ha snow-pl the snow was white. <i>the snow was white.</i>	Sefid White	bud be.PAST.3SG

Table A-1. Continued

item	condition	VT	stimuli	gloss		
97	past-SG	G	گوشواره ها قشنگ بود.	gushvare-ha ear ring-pl the ear rings was beautiful. <i>the ear rings were beautiful.</i>	qæshæng beautiful	bud be.PAST.3SG
98	past-SG	G	شال ها ابریشمی بود.	shal-ha shawl-pl the shawls was silk. <i>the shawls were silk.</i>	æbrishæmi Silk	bud be.PAST.3SG
99	past-SG	H	زمینها سیراب شد.	zæmin-ha land-pl the lands became saturated. <i>the lands were saturated.</i>	sirab saturated	shod become.PAST.3SG
100	past-SG	H	ساعتها گم شد.	sa'æt-ha watch-pl the watches became lost. <i>the watches were lost.</i>	gom lost	shod become.PAST.3SG
101	past-SG	H	لکه ها پاک شد.	læke-ha stain-pl the stains became wiped. <i>the stains were wiped.</i>	pak wiped	shod become.PAST.3SG
102	past-SG	H	سبزی ها پژمرده شد.	sæbzi-ha herb-pl the herbs became withered/faded. <i>the herbs were withered/faded.</i>	pæzhmorde withered/faded	shod become.PAST.3SG
103	past-SG	H	قایق ها غرق شد.	qayeq-ha boat-pl the boats became sunk. <i>the boats were sunk.</i>	qærq sunk	shod become.PAST.3SG
104	past-SG	H	بادکنک ها ول شد.	badkonak-ha balloon-pl the balloons became floated away. <i>the balloons were floated away.</i>	Vel floated away	shod become.PAST.3SG

Table A-1. Continued

item	condition	VT	stimuli	gloss		
105	past-SG	H	بالونها رها شد.	balon-ha hot air balloon- pl the hot air balloons	ræha floated away became	shod become.PAST.3SG <i>the hot air balloons were floated away.</i>
106	past-SG	H	انبارها خراب شد.	ænbar-ha warehouse-pl the warehouses	xærab ruined became	shod become.PAST.3SG <i>the warehouses were ruined.</i>
107	past-SG	H	سکه ها پیداشد.	seke-ha coin-pl the coins	peida found became	shod become.PAST.3SG <i>the coins were found.</i>
108	past-SG	H	سیمان ها سخت شد.	siman-ha cement-pl the cement	sæxt set became	shod become.PAST.3SG <i>the cement was set.</i>
109	past-SG	H	بستی ها آب شد.	bæstæni-ha ice-cream-pl the ice-cream	ab water became	shod become.PAST.3SG <i>the ice-cream was melted.</i>
110	past-SG	H	رنگها خشک شد.	ræng-ha paint-pl the paint	xoshk dry became	Shod become.PAST.3SG <i>the paint dried.</i>
111	past-SG	H	ورزشگاه ها نابود شد.	varzeshgah-ha stadium-pl the stadiums	nabud ruined became	Shod become.PAST.3SG <i>the stadiums were ruined.</i>
112	past-SG	H	تخم مرغ ها تمام شد.	toxm-e morqha egg-EZ hen-pl the eggs	tæmum end became	Shod become.PAST.3SG <i>the eggs ran out.</i>

Table A-2. List of the stimuli for judgment experiment (Condition: Past Plural)

item	condition	VT	stimuli	Gloss		
1	past-PL	A	طناب ها گره خوردن.	tænab-ha rope-pl the ropes became knotted. <i>the ropes became knotted.</i>	gere knot	xord-æn collide.Past-3PL
2	past-PL	A	زنجیر ها پیچ خوردن.	zænjir-ha chain-pl the chains became twisted. <i>the chains became twisted.</i>	pich twist	xord-æn collide.Past-3PL
3	past-PL	A	درها رنگ خوردن.	dær-ha door-pl the doors became painted. <i>the doors became painted.</i>	ræng paint	xord-æn collide.Past-3PL
4	past-PL	A	فرش ها خاک خوردن.	færsh-ha rug-pl the rugs became dusty. <i>the rugs became dusty.</i>	xak dust	xord-æn collide.Past-3PL
5	past-PL	A	کتابخونه ها رونق گرفتن.	ketab xune-ha library-pl the libraries flourished. <i>the libraries flourished.</i>	ronæq flourishing	gereft-æn take.Past-3PL
6	past-PL	A	دفتر ها باقی ماندن.	dæftær-ha notebook-pl the notebooks remained. <i>the notebooks remained.</i>	baqi left	mund-æn remain.Past-3PL
7	past-PL	A	سقفها فرو ریختن.	sæqf-ha roof-pl the roofs collapsed. <i>the roofs collapsed.</i>	foru down	rixt-æn collapse.Past-3PL
8	past-PL	A	گردوها غل خوردن.	gerdu-ha walnut-pl the walnuts spun. <i>the walnuts spun.</i>	qel spinning	xord-æn collide.Past-3PL

Table A-2. Continued

item	condition	VT	stimuli	Gloss		
9	past-PL	A	بسته ها برگشت خوردن.	bæste-ha package-pl the packages returned. <i>the packages returned.</i>	Bærgæsht returning	xord-æn collide.Past-3PL
10	past-PL	A	کفش ها سر خوردن.	kæfsh-ha shoe-pl the shoes slid. <i>the shoes slid.</i>	sor sliding	xord-æn collide.Past-3PL
11	past-PL	A	میوه ها هدر رفتن.	mive-ha fruit-pl the fruits were wasted. <i>the fruits were wasted.</i>	hædær wasting	ræft-æn go.Past-3PL
12	past-PL	A	برگ ها تکان خوردن.	bærg-ha leaf-pl the leaves swayed. <i>the leaves swayed.</i>	tekan swaying	xord-æn collide.Past-3PL
13	past-PL	A	سنگ ها فرو رفتن.	sæng-ha stone-pl the stones sunk. <i>the stones sunk.</i>	foru sinking	ræft-æn go.Past-3PL
14	past-PL	A	تخته ها شناور ماندن.	taxte-ha board-pl the boards were floating. <i>the boards were floating.</i>	shenavær floating	mund-æn remain.Past-3PL
15	past-PL	B	لوبیاها جوانه زدن.	lubia-ha bean-pl the beans sprouted. <i>the beans sprouted.</i>	jævane sprout	zæd-æn strike.Past-3PL
16	past-PL	B	میخکها گل کردن.	mixæk-ha Carnation the carnations flowered. <i>the carnations flowered.</i>	gol flower	kærd-æn do.Past-3PL

Table A-2. Continued

item	condition	VT	stimuli	gloss		
17	past-PL	B	ساقه ها برگ دادن.	saqe-ha stem-pl the stems budded. <i>the stems budded.</i>	bærg leaf	dad-æn give.Past-3PL
18	past-PL	B	دونه ها رشد کردن.	dune-ha seed-pl the seeds grew. <i>the seeds grew.</i>	roshd growing	kærd-æn do.Past-3PL
19	past-PL	B	طوفان ها فرو نشستن.	tufan-ha storm-pl the storms subsided. <i>the storms subsided.</i>	foru subsiding	neshæst-æn sit.Past-3PL
20	past-PL	B	خمیر ها ور آمدن.	xæmir-ha dough-pl the dough raised. <i>the dough raised.</i>	vær raising	amæd-æn come.Past-3PL
21	past-PL	B	دست ها ورم کردن.	dæst-ha hand-pl the hands swelled. <i>the hands swelled.</i>	væræm swelling	kærd-æn do.Past-3PL
22	past-PL	B	زخم ها جوش خوردن.	zæxm-ha sore-pl the sores scabbed over. <i>the sores scabbed over.</i>	jush scabbing over	xord-æn collide.Past-3PL
23	past-PL	B	پاهای تاول زدن.	pa-ha foot-pl the feet blistered. <i>the feet blistered.</i>	tavæl blistering	zæd-æn strike.Past-3PL
24	past-PL	B	آهن ها زنگ زدن.	ahæn-ha iron-pl the irons rusted. <i>the irons rusted.</i>	zæng rust	zæd-æn strike.Past-3PL

Table A-2. Continued

item	condition	VT	stimuli	gloss		
25	past-PL	B	شاخه ها شکوفه کردن.	shaxe-ha branch-pl the branches blossomed. <i>the branches blossomed.</i>	shokufe blossom	kærd-æn do.Past-3PL
26	past-PL	B	جوانه ها غنچه کردن.	jævane-ha twig-pl the twigs budded. <i>the twigs budded.</i>	qonche bud	kærd-æn do.Past-3PL
27	past-PL	B	خیارها کپک زدن.	xiyar-ha cucumber-pl the cucumbers molded. <i>the cucumbers molded.</i>	kæpæk mold	zæd-æn strike.Past-3PL
28	past-PL	B	گندمها ریشه کردن.	gændom-ha wheat-pl the wheat took root. <i>the wheat took root.</i>	rishe root	kærd-æn do.Past-3PL
29	past-PL	C	لامپها نور دادن.	lamp-ha lamp-pl the lamps gave light. <i>the lamps gave light.</i>	nur light	dad-æn give.Past-3PL
30	past-PL	C	روزنامه ها خُش خُش کردن.	ruzname-ha newspaper-pl the newspapers rustled. <i>the newspapers rustled.</i>	xesh xesh rustling	kærd-æn do.Past-3PL
31	past-PL	C	آش ها قُل زدن.	ash-ha porridge-pl the porridge bubbled. <i>the porridge bubbled.</i>	qol bubble	zæd-æn strike.Past-3PL
32	past-PL	C	آتشفشانها فوران کردن.	atæshfeshan-ha volcano-pl the volcanoes gushed. <i>the volcanoes gushed.</i>	fæværan gush	kærd-æn do.Past-3PL

Table A-2. Continued

item	condition	VT	stimuli	gloss		
33	past-PL	C	بشکه ها نشت کردن.	boshke-ha barrel-pl the barrels oozed. <i>the barrels oozed.</i>	næsht ooze	kærd-æn do.Past-3PL
34	past-PL	C	سکه ها جرینگ جرینگ کردن.	seke-ha coin-pl the coins jingled. <i>the coins jingled.</i>	jering jering jingle	kærd-æn do.Past-3PL
35	past-PL	C	بادها زوزه کشیدن.	bad-ha wind-pl the winds moaned. <i>the winds moaned.</i>	zuze moan	keshid-æn pull.Past-3PL
36	past-PL	C	چراغها سو سو زدن.	cheraq-ha light-pl the lights flickered. <i>the lights flickered.</i>	su su flicker	zæd-æn strike.Past-3PL
37	past-PL	C	مته ها وزوز کردن.	mæte-ha drill-pl the drills buzzed. <i>the drills buzzed.</i>	vez vez buzz	kærd-æn do.Past-3PL
38	past-PL	C	لیوان ها برق زدن.	livan-ha glass-pl the glasses gleamed. <i>the glasses gleamed.</i>	bærq gleaming	zæd-æn strike.Past-3PL
39	past-PL	C	سیم ها جرقه زدن.	sim-ha cord-pl the electrical cords sparked. <i>the electrical cords sparked.</i>	jæræqe spark	zæd-æn strike.Past-3PL
40	past-PL	C	اره ها سر و صدا کردن.	ærre-ha saw-pl the saws made noise. <i>the saws made noise.</i>	sær o seda noise	kærd-æn do.Past-3PL

Table A-2. Continued

item	condition	VT	stimuli	gloss		
41	past-PL	C	پنجره ها تق تق کردن.	pænjære-ha window-pl the windows rattled. <i>the windows rattled.</i>	tæq tæq rattling	kærd-æn do.Past-3PL
42	past-PL	C	دوربین ها فلاش زدن.	durbin-ha camera-pl the cameras flashed. <i>the cameras flashed.</i>	felash flashing	zæd-æn strike.Past-3PL
43	past-PL	D	فرستنده ها مخابره کردن.	ferestænde-ha beacon-pl the beacons transmitted. <i>the beacons transmitted.</i>	moxabere transmitting	kærd-æn do.Past-3PL
44	past-PL	D	دوربین ها عکس گرفتن.	durbin-ha camera-pl the cameras photographed. <i>the cameras photographed.</i>	æks photo	gereft-æn take.Past-3PL
45	past-PL	D	هلیکوپترها چرخ زدن.	helikopter-ha helicopter-pl the helicopters rotated. <i>the helicopters rotated.</i>	chærx rotating	zæd-æn strike.Past-3PL
46	past-PL	D	قایق ها فرار کردن.	qayeq-ha boat-pl the boats escaped. <i>the boats escaped.</i>	færar escaping	kærd-æn do.Past-3PL
47	past-PL	D	رادیو ها اطلاع دادن.	radiyo-ha radio-pl the radios informed. <i>the radios informed.</i>	ettela information	dad-æn give.Past-3PL
48	past-PL	D	آسانسورها بالا رفتن.	asansor-ha elevator-pl the elevators went up. <i>the elevators went up.</i>	bala up	ræft-æn go.Past-3PL

Table A-2. Continued

item	condition	VT	stimuli	gloss		
49	past-PL	D	تاکسی ها دور زدن.	taksi-ha taxi-pl the taxies turned around. <i>the taxies turned around.</i>	dowr round	zæd-æn strike.Past-3PL
50	past-PL	D	مته ها سوراخ کردن.	mæte-ha drill-pl the drills made a hole. <i>the drills made a hole.</i>	surax hole	kærd-æn do.Past-3PL
51	past-PL	D	وانت بارها قاچاق کردن.	vanet bar-ha truck-pl the trucks smuggled. <i>the trucks smuggled.</i>	qachaq smuggling	kærd-æn do.Past-3PL
52	past-PL	D	تانک ها حمله کردن.	tank-ha tank-pl the tanks attacked. <i>the tanks attacked.</i>	hæmle attack	kærd-æn do.Past-3PL
53	past-PL	D	پنکه ها خنک کردن.	pænke-ha fan-pl the fans cooled. <i>the fans cooled.</i>	xonæk cool	kærd-æn do.Past-3PL
54	past-PL	D	هواپیماها پرواز کردن.	hæva peima-ha airplane-pl the airplanes flew. <i>the airplanes flew.</i>	pærvaz flight	kærd-æn do.Past-3PL
55	past-PL	D	بلندگوها اعلام کردن.	bolændgoo-ha loudspeaker-pl the loudspeakers announced. <i>the loudspeakers announced.</i>	elam announcing	kærd-æn do.Past-3PL
56	past-PL	D	رادارها شناسایی کردن.	radar-ha radar-pl the radars identified. <i>the radars identified.</i>	shenasa'i identify	kærd-æn do.Past-3PL

Table A-2. Continued

item	condition	VT	stimuli	gloss		
57	past-PL	E	باقلواها چشمک زدن.	baqlava-ha baklava-pl the baklavas <i>the baklavas</i>	cheshmæk winking winked. <i>winked.</i>	zæd-æn strike.Past-3PL
58	past-PL	E	قابلمه ها تقلب کردن.	qablame-ha pot-pl the pots <i>the pots</i>	tæqælob cheating cheated. <i>cheated.</i>	kærd-æn do.Past-3PL
59	past-PL	E	مداد ها اخم کردن.	medad-ha pencil-pl the pencils <i>the pencils</i>	æxm frowning frowned. <i>frowned.</i>	kærd-æn do.Past-3PL
60	past-PL	E	جاروها راه رفتن.	jaru-ha broom-pl the broom <i>the broom</i>	rah way walked. <i>walked.</i>	ræft-æn go.Past-3PL
61	past-PL	E	دیوارها سوت زدن.	divar-ha wall-pl the walls <i>the walls</i>	sut whistling whistled. <i>whistled.</i>	zæd-æn strike.Past-3PL
62	past-PL	E	روسری ها لبخند زدن.	rusæri-ha scarf-pl the scarves <i>the scarves</i>	læbxænd smiling smiled. <i>smiled.</i>	zæd-æn strike.Past-3PL
63	past-PL	E	عطرها گریه کردن.	ætr-ha perfume-pl the perfumes <i>the perfumes</i>	gerye crying cried. <i>cried.</i>	kærd-æn do.Past-3PL
64	past-PL	E	لوله ها ورزش کردن.	lule-ha pipe-pl the pipes <i>the pipes</i>	værzesh exercising exercised. <i>exercised.</i>	kærd-æn do.Past-3PL

Table A-2. Continued

item	condition	VT	stimuli	gloss		
65	past-PL	E	خودکارها زانو زدن.	xodkar-ha pen-pl the pens kneeled. <i>the pens kneeled.</i>	zanu kneeling	zæd-æn strike.Past-3PL
66	past-PL	E	بلند گوها موافقت کردن.	bolændgu-ha loudspeaker-pl the loudspeakers agreed. <i>the loudspeakers agreed.</i>	movafeqæt agreeing	kærd-æn do.Past-3PL
67	past-PL	E	گوجه ها فکر کردن.	goje-ha tomato-pl the tomatoes thought. <i>the tomatoes thought.</i>	fekr thinking	kærd-æn do.Past-3PL
68	past-PL	E	نخود ها دعوا کردن.	noxod-ha pea-pl the peas quarreled. <i>the peas quarreled.</i>	da'va quarreling	kærd-æn do.Past-3PL
69	past-PL	E	کامپیوترها تعظیم کردن.	kamputer-ha computer-pl the computers bowed. <i>the computers bowed.</i>	ta'zim bowing	kærd-æn do.Past-3PL
70	past-PL	E	پنجره ها نرمش کردن.	pænjære-ha window-pl the windows exercised. <i>the windows exercised.</i>	jærmesh exercising	kærd-æn do.Past-3PL
71	past-PL	F	گلابیها خورده شدن.	golabi-ha pear-pl the pears were eaten. <i>the pears were eaten.</i>	xorde eaten	shod-æn become.Past-3PL
72	past-PL	F	جوراب ها پوشیده شدن.	jurab-ha sock-pl the socks were worn. <i>the socks were worn.</i>	pushide worn	shod-æn become.Past-3PL

Table A-2. Continued

item	condition	VT	stimuli	Gloss		
73	past-PL	F	داستان ها خوانده شدن.	dastan-ha story-pl the stories were read. <i>the stories were read.</i>	xande read	shod-æn become.Past-3PL
74	past-PL	F	دستمال ها خریده شدن.	dæstmal-ha handkerchief-pl the handkerchiefs were bought. <i>the handkerchiefs were bought.</i>	xærīde bought	shod-æn become.Past-3PL
75	past-PL	F	دامن ها دوخته شدن.	damæn-ha skirt-pl the skirts were sewn. <i>the skirts were sewn.</i>	duxte sewn	shod-æn become.Past-3PL
76	past-PL	F	تپه ها دیده شدن.	tæpe-ha hill-pl the hills were seen. <i>the hills were seen.</i>	dīde seen	shod-æn become.Past-3PL
77	past-PL	F	بشقابها شسته شدن.	boshqab-ha plate-pl the plates were washed. <i>the plates were washed.</i>	shoste washed	shod-æn become.Past-3PL
78	past-PL	F	قندان ها شکسته شدن.	qændan-ha sugar bowl-pl the sugar bowls were broken. <i>the sugar bowls were broken.</i>	shekæste broken	shod-æn become.Past-3PL
79	past-PL	F	چمدان ها فروخته شدن.	chæmedan-ha suitcase-pl the suitcases were sold. <i>the suitcases were sold.</i>	foruxte sold	shod-æn become.Past-3PL

Table A-2. Continued

item	condition	VT	stimuli	gloss		
80	past-PL	F	توت فرنگی ها چیده شدن.	tut fæærængi-ha strawberry-pl the strawberries were picked. <i>the strawberries were picked.</i>	chide picked	shod-æn become.Past-3PL
81	past-PL	F	ژاکت ها بافته شدن.	zhaket-ha sweater-pl the sweaters were knitted. <i>the sweaters were knitted.</i>	baftæ knitted	shod-æn become.Past-3PL
82	past-PL	F	عینک ها شمرده شدن.	einæk-ha eye-glass-pl the eye-glasses were counted. <i>the eye-glasses were counted.</i>	shomorde counted	shod-æn become.Past-3PL
83	past-PL	F	انگشتر ها فرستاده شدن.	ængoshtær-ha ring-pl the rings were sent. <i>the rings were sent.</i>	ferestade sent	shod-æn become.Past-3PL
84	past-PL	F	هویج ها پخته شدن.	hævij-ha carrot-pl the carrots were cooked. <i>the carrots were cooked.</i>	poxte cooked	shod-æn become.Past-3PL
85	past-PL	G	میزها چوبی بودن.	miz-ha table-pl the tables were wooden. <i>the tables were wooden.</i>	chubi wooden	bud-æn be.Past-3PL
86	past-PL	G	مدادها قرمز بودن.	medad-ha pencil-pl the pencils were red. <i>the pencils were red.</i>	qermez red	bud-æn be.Past-3PL
87	past-PL	G	سیبها سفت بودن.	sib-ha apple-pl the apples were crisp. <i>the apples were crisp.</i>	seft crisp	bud-æn be.Past-3PL

Table A-2. Continued

item	condition	VT	stimuli	gloss		
88	past-PL	G	گوجه ها تازه بودن.	goje-ha tomato-pl the tomatoes were fresh. <i>the tomatoes were fresh.</i>	taze fresh	bud-æn be.Past-3PL
89	past-PL	G	خانه ها دور بودن.	xane-ha house-pl the houses were far. <i>the houses were far.</i>	dur far	bud-æn be.Past-3PL
90	past-PL	G	نرده ها فلزی بودن.	nærde-ha fence-pl the fences were metallic. <i>the fences were metallic.</i>	felezi metallic	bud-æn be.Past-3PL
91	past-PL	G	پله ها سنگی بودن.	pele-ha stair-pl the stairs were made of stone. <i>the stairs were made of stone.</i>	sængi made of stone	bud-æn be.Past-3PL
92	past-PL	G	صندلی ها چرمی بودن.	sændæli-ha chair-pl the chairs were leather. <i>the chairs were leather.</i>	chærmi leather	bud-æn be.Past-3PL
93	past-PL	G	قیر ها سیاه بودن.	qir-ha tar-pl the tar were black. <i>the tar was black.</i>	siyah black	bud-æn be.Past-3PL
94	past-PL	G	مدرسه ها نزدیک بودن.	mædrese-ha school-pl the schools were near. <i>the schools were near.</i>	næzdik near	bud-æn be.Past-3PL
95	past-PL	G	تخت ها بزرگ بودن.	tæxt-ha bed-pl the beds were big. <i>the beds were big.</i>	bozorg big	bud-æn be.Past-3PL

Table A-2. Continued

item	condition	VT	stimuli	gloss		
96	past-PL	G	برفها سفید بودن.	bærf-ha snow-pl the snow were white. <i>the snow was white.</i>	sefid white	bud-æn be.Past-3PL
97	past-PL	G	گوشواره ها قشنگ بودن.	gushvare-ha ear ring-pl the ear rings were beautiful. <i>the ear rings were beautiful.</i>	qæshæng beautiful	bud-æn be.Past-3PL
98	past-PL	G	شال ها ابریشمی بودن.	shal-ha shawl-pl the shawls were silk. <i>the shawls were silk.</i>	brishæmi silk	bud-æn be.Past-3PL
99	past-PL	H	زمینها سیراب شدن.	zæmin-ha land-pl the lands became saturated. <i>the lands were saturated.</i>	sirab saturated	shod-æn become.Past-3PL
100	past-PL	H	ساعتها گم شدن.	sa'æt-ha watch-pl the watches became lost. <i>the watches were lost.</i>	gom lost	shod-æn become.Past-3PL
101	past-PL	H	لکه ها پاک شدن.	læke-ha stain-pl the stains became wiped. <i>the stains were wiped.</i>	pak wiped	shod-æn become.Past-3PL
102	past-PL	H	سبزی ها پژمرده شدن.	sæbzi-ha herb-pl the herbs became withered/faded. <i>the herbs were withered/faded.</i>	pæzhmorde withered/faded	shod-æn become.Past-3PL
103	past-PL	H	قایق ها غرق شدن.	qayeq-ha boat-pl the boats became sunk. <i>the boats were sunk.</i>	qærq sunk	shod-æn become.Past-3PL

Table A-2. Continued

item	condition	VT	stimuli	gloss		
104	past-PL	H	بادکنک ها ول شدن.	badkonak-ha balloon-pl	vel floated away	shod-æn become.Past-3PL
				the balloons became floated away. <i>the balloons were floated away.</i>		
105	past-PL	H	بالونها رها شدن.	balon-ha hot air balloon-pl	ræha floated away	shod-æn become.Past-3PL
				the hot air balloons became floated away. <i>the hot air balloons were floated away.</i>		
106	past-PL	H	انبارها خراب شدن.	ænbar-ha warehouse-pl	xærab ruined	shod-æn become.Past-3PL
				the warehouses became ruined <i>the warehouses were ruined</i>		
107	past-PL	H	سکه ها پیداشدن.	seke-ha coin-pl	peida found	shod-æn become.Past-3PL
				the coins became found. <i>the coins were found.</i>		
108	past-PL	H	سیمان ها سخت شدن.	siman-ha cement-pl	sæxt set	shod-æn become.Past-3PL
				the cement became set. <i>the cement were set.</i>		
109	past-PL	H	بستی ها آب شدن.	bæstæni-ha ice-cream-pl	ab water	shod-æn become.Past-3PL
				the ice-cream became melted. <i>the ice-cream was melted.</i>		
110	past-PL	H	رنگها خشک شدن.	ræng-ha paint-pl	xoshk dry	shod-æn become.Past-3PL
				the paint became dry. <i>the paint dried.</i>		

Table A-2. Continued

item	condition	VT	stimuli	gloss		
111	past-PL	H	ورزشگاه ها نابود شدن.	varzeshgah-ha stadium-pl the stadiums became ruined. <i>the stadiums were ruined.</i>	nabud ruined	shod-æn become.Past-3PL
112	past-PL	H	تخم مرغ ها تموم شدن.	toxm-e morqha egg-EZ hen-pl the eggs became end. <i>the eggs ran out.</i>	tæmum end	shod-æn become.Past-3PL

Table A-3. List of the stimuli for judgment experiment (Condition: Present Singular)

item	conditon	VT	stimuli	Gloss		
1	Present-SG	A	طناب ها گره می خوره.	tænab-ha rope-pl	gere knot	mi-xor-e IND-collide-3SG
				the ropes becomes knotted. <i>the ropes become knotted.</i>		
2	Present-SG	A	زنجیر ها پیچ می خوره.	zænjir-ha chain-pl	pich twist	mi-xor-e IND-collide-3SG
				the chains becomes twisted. <i>the chains become twisted.</i>		
3	Present-SG	A	درها رنگ می خوره.	dær-ha door-pl	ræng paint	mi-xor-e IND-collide-3SG
				the doors becomes painted. <i>the doors become painted.</i>		
4	Present-SG	A	فرش ها خاک می خوره.	færsh-ha rug-pl	xak dust	mi-xor-e IND-collide-3SG
				the rugs becomes dusty. <i>the rugs become dusty.</i>		
5	Present-SG	A	کتابخونه ها رونق می گیره.	ketab xune-ha library-pl	ronæq flourishing	mi-gir-e IND-take-3SG
				the libraries flourishes. <i>the libraries flourish.</i>		
6	Present-SG	A	دفتر ها باقی می مونه.	dæftær-ha notebook-pl	baqi left	mi-mun-e IND-remain-3SG
				the notebooks remains. <i>the notebooks remain.</i>		
7	Present-SG	A	سقفها فرو می ریزه.	sæqf-ha roof-pl	foru down	mi-riz-e IND-collapse-3SG
				the roofs collapses. <i>the roofs collapse.</i>		
8	Present-SG	A	گردوها غل می خوره.	gerdu-ha walnut-pl	qel spinning	mi-xor-e IND-collide-3SG
				the walnuts spins. <i>the walnuts spin.</i>		

Table A-3. Continued

item	conditon	VT	stimuli	Gloss		
9	Present-SG	A	بسته ها برگشت می خوره.	bæste-ha package-pl the packages returns. <i>the packages return.</i>	bærgæsht returning	mi-xor-e IND-collide-3SG
10	Present-SG	A	کفش ها سر می خوره.	kæfsh-ha shoe-pl the shoes slid. <i>the shoes slid.</i>	sor sliding	mi-xor-e IND-collide-3SG
11	Present-SG	A	میوه ها هدر میره.	mive-ha fruit-pl the fruits is wasted. <i>the fruits are wasted.</i>	hædær wasting	mi-r-e IND-go-3SG
12	Present-SG	A	برگ ها تکان می خوره.	bærg-ha leaf-pl the leaves sways. <i>the leaves sway.</i>	tekan swaying	mi-xor-e IND-collide-3SG
13	Present-SG	A	سنگ ها فرو میره.	sæng-ha stone-pl the stones sinks. <i>the stones sink.</i>	foru sinking	mi-r-e IND-go-3SG
14	Present-SG	A	تخته ها شناور می مونه.	taxte-ha board-pl the boards is floating. <i>the boards are floating.</i>	shenavær floating	mi-mun-e IND-remain-3SG
15	Present-SG	B	لوبیاها جوانه می زنه.	lubia-ha bean-pl the beans sprouts. <i>the beans sprout.</i>	jævane sprout	mi-zæn-e IND-strike-3SG
16	Present-SG	B	میخکها گل می کُنه.	mixæk-ha carnation the carnations flowers. <i>the carnations flower.</i>	gol flower	mi-kon-e IND-DO-3SG

Table A-3. Continued

item	conditon	VT	stimuli	Gloss		
17	Present-SG	B	ساقه ها برگ می ده.	saqe-ha stem-pl the stems buds. <i>the stems bud.</i>	bærg leaf	mi-d-e IND-give-3SG
18	Present-SG	B	دونه ها رشد می کنه.	dune-ha seed-pl the seeds grows. <i>the seeds grow.</i>	roshd growing	mi-kon-e IND-DO-3SG
19	Present-SG	B	طوفان ها فرو می شینه.	tufan-ha storm-pl the storms subsides. <i>the storms subside.</i>	foru subsiding	mi-shin-e IND-sit-3SG
20	Present-SG	B	خمیر ها ور می آد.	xæmir-ha dough-pl the dough raises. <i>the dough raises.</i>	vær raising	mi-a-d IND-come-3SG
21	Present-SG	B	دست ها ورم می کنه.	dæst-ha hand-pl the hands swells. <i>the hands swell.</i>	væræm swelling	mi-kon-e IND-DO-3SG
22	Present-SG	B	زخم ها جوش می خوره.	zæxm-ha sore-pl the sores scabs over. <i>the sores scab over.</i>	jush scabbing over	mi-xor-e IND-collide-3SG
23	Present-SG	B	پاها تاول می زنه.	pa-ha foot-pl the feet blisters. <i>the feet blister.</i>	tavæł blistering	mi-zæn-e IND-strike-3SG
24	Present-SG	B	آهن ها زنگ می زنه.	ahæn-ha iron-pl the irons rusts. <i>the irons rust.</i>	zæng rust	mi-zæn-e IND-strike-3SG

Table A-3. Continued

item	conditon	VT	stimuli	Gloss		
25	Present-SG	B	شاخه ها شکوفه می کنه.	shaxe-ha branch-pl the branches blossoms. <i>the branches blossom.</i>	shokufe blossom	mi-kon-e IND-DO-3SG
26	Present-SG	B	جوانه ها غنچه می کنه.	jævane-ha twig-pl the twigs buds. <i>the twigs bud.</i>	qonche bud	mi-kon-e IND-DO-3SG
27	Present-SG	B	خیارها کپک می زینه.	xiyar-ha cucumber-pl the cucumbers molds. <i>the cucumbers mold.</i>	kæpæk mold	mi-zæn-e IND-strike-3SG
28	Present-SG	B	گندمها ریشه می کنه.	gændom-ha wheat-pl the wheat takes root. <i>the wheat takes root.</i>	rishe root	mi-kon-e IND-DO-3SG
29	Present-SG	C	لامپها نور می ده.	lamp-ha lamp-pl the lamps gives light. <i>the lamps give light.</i>	nur light	mi-d-e IND-give-3SG
30	Present-SG	C	روزنامه ها خُش خُش می کنه.	ruzname-ha newspaper-pl the newspapers rustles. <i>the newspapers rustle.</i>	xesh rustling	mi-kon-e IND-DO-3SG
31	Present-SG	C	آش ها قُل می زینه.	ash-ha porridge-pl the porridge bubbles. <i>the porridge bubbles.</i>	qol bubble	mi-zæn-e IND-strike-3SG
32	Present-SG	C	آتشفشانها فوران می کنه.	atæshfeshan- ha volcano-pl the volcanoes gushes. <i>the volcanoes gush.</i>	fæværan gush	mi-kon-e IND-DO-3SG

Table A-3. Continued

item	conditon	VT	stimuli	Gloss
33	Present-SG	C	بشکه ها نشت می کنه.	boshke-ha nəsht mi-kon-e barrel-pl ooze IND-DO-3SG the barrels oozes. <i>the barrels ooze.</i>
34	Present-SG	C	سکه ها جرینگ جرینگ می کنه.	seke-ha jering jering mi-kon-e coin-pl jingle IND-DO-3SG the coins jingles. <i>the coins jingle.</i>
35	Present-SG	C	بادها زوزه می کشه.	bad-ha zuze mi-kesh-e wind-pl moan IND-pull-3SG the winds moans. <i>the winds moan.</i>
36	Present-SG	C	چراغها سو سو می زنه.	cheraq-ha su su mi-zæn-e light-pl flicker IND-strike-3SG the lights flickers. <i>the lights flicker.</i>
37	Present-SG	C	مته ها وزوز می کنه.	mæte-ha vez vez mi-kon-e drill-pl buzz IND-DO-3SG the drills buzzes. <i>the drills buzz.</i>
38	Present-SG	C	لیوان ها برق می زنه.	livan-ha bærq mi-zæn-e glass-pl gleaming IND-strike-3SG the glasses gleams. <i>the glasses gleam.</i>
39	Present-SG	C	سیم ها جرقه می زنه.	sim-ha jæræqe mi-zæn-e cord-pl spark IND-strike-3SG the electrical cords sparks. <i>the electrical cords spark.</i>
40	Present-SG	C	اره ها سر و صدا می کنه.	ærre-ha sær o seda mi-kon-e saw-pl noise IND-DO-3SG the saws makes noise. <i>the saws make noise.</i>

Table A-3. Continued

item	conditon	VT	stimuli	Gloss		
41	Present-SG	C	پنجره ها تق تق می کُنه.	pænjære-ha window-pl the windows rattles. <i>the windows rattle.</i>	tæq tæq rattling	mi-kon-e IND-DO-3SG
42	Present-SG	C	دوربین ها فلاش می زنه.	durbin-ha camera-pl the cameras flashes. <i>the cameras flash.</i>	felash flashing	mi-zæn-e IND-strike-3SG
43	Present-SG	D	فرستنده ها مخابره می کُنه.	ferestænde-ha beacon-pl the beacons transmits. <i>the beacons transmit.</i>	moxabere transmitting	mi-kon-e IND-DO-3SG
44	Present-SG	D	دوربین ها عکس می گیره.	durbin-ha camera-pl the cameras photographs. <i>the cameras photograph.</i>	æks photo	mi-gir-e IND-take-3SG
45	Present-SG	D	هلیکوپترها چرخ می زنه.	helikopter-ha helicopter-pl the helicopters rotates. <i>the helicopters rotate.</i>	chærx rotating	mi-zæn-e IND-strike-3SG
46	Present-SG	D	قایق ها فرار می کُنه.	qayeq-ha boat-pl the boats escapes. <i>the boats escape.</i>	færar escaping	mi-kon-e IND-DO-3SG
47	Present-SG	D	رادیو ها اطلاع می ده.	radiyo-ha radio-pl the radios informs. <i>the radios inform.</i>	ettela information	mi-d-e IND-give-3SG
48	Present-SG	D	آسانسورها بالا میره.	asansor-ha elevator-pl the elevators goes up. <i>the elevators go up.</i>	bala up	mi-r-e IND-go-3SG

Table A-3. Continued

item	conditon	VT	stimuli	Gloss		
49	Present-SG	D	تاکسی ها دور می زنه.	taksi-ha taxi-pl the taxies turns around. <i>the taxies turn around.</i>	dowr round	mi-zæn-e IND-strike-3SG
50	Present-SG	D	منه ها سوراخ می کنه.	mæte-ha drill-pl the drills makes a hole. <i>the drills make a hole.</i>	surax hole	mi-kon-e IND-DO-3SG
51	Present-SG	D	وانت بارها قاچاق می کنه.	vanet bar-ha truck-pl the trucks smuggles. <i>the trucks smuggle.</i>	qachaq smuggling	mi-kon-e IND-DO-3SG
52	Present-SG	D	تانک ها حمله می کنه.	tank-ha tank-pl the tanks attacks. <i>the tanks attack.</i>	hæmle attack	mi-kon-e IND-DO-3SG
53	Present-SG	D	پنکه ها خنک می کنه.	pænke-ha fan-pl the fans cools. <i>the fans cool.</i>	xonæk cool	mi-kon-e IND-DO-3SG
54	Present-SG	D	هواپیماها پرواز می کنه.	hæva peima-ha airplane-pl the airplanes flies. <i>the airplanes fly.</i>	pærvaz flight	mi-kon-e IND-DO-3SG
55	Present-SG	D	بلندگوها اعلام می کنه.	bolændgoo-ha loudspeaker-pl the loudspeakers announces. <i>the loudspeakers announce.</i>	elam announcing	mi-kon-e IND-DO-3SG
56	Present-SG	D	رادارها شناسایی می کنه.	radar-ha radar-pl the radars identifies. <i>the radars identify.</i>	shenasa'i identify	mi-kon-e IND-DO-3SG

Table A-3. Continued

item	conditon	VT	stimuli	Gloss		
57	Present-SG	E	باقلواها چشمک می زنه.	baqlava-ha baklava-pl the baklavas <i>the baklavas wink.</i>	cheshmæk winking winks. <i>wink.</i>	mi-zæn-e IND-strike-3SG
58	Present-SG	E	قابلمه ها تقلب می کنه.	qablame-ha pot-pl the pots <i>the pots cheat.</i>	tæqælob cheating cheats. <i>cheat.</i>	mi-kon-e IND-DO-3SG
59	Present-SG	E	مداد ها اخم می کنه.	medad-ha pencil-pl the pencils <i>the pencils frown.</i>	æxm frowning frowns. <i>frown.</i>	mi-kon-e IND-DO-3SG
60	Present-SG	E	جارو ها راه میره.	jaru-ha broom-pl the broom <i>the broom walk.</i>	rah way walks. <i>walk.</i>	mi-r-e IND-go-3SG
61	Present-SG	E	دیوارها سوت می زنه.	divar-ha wall-pl the walls <i>the walls whistle.</i>	sut whistling whistles. <i>whistle.</i>	mi-zæn-e IND-strike-3SG
62	Present-SG	E	روسری ها لبخند می زنه.	rusæri-ha scarf-pl the scarves <i>the scarves smile.</i>	læbxænd smiling smiles. <i>smile.</i>	mi-zæn-e IND-strike-3SG
63	Present-SG	E	عطرها گریه می کنه.	ætr-ha perfume-pl the perfumes <i>the perfumes cry.</i>	gerye crying cries. <i>cry.</i>	mi-kon-e IND-DO-3SG
64	Present-SG	E	لوله ها ورزش می کنه.	lule-ha pipe-pl the pipes <i>the pipes exercise.</i>	værzesh exercising exercises. <i>exercise.</i>	mi-kon-e IND-DO-3SG

Table A-3. Continued

item	conditon	VT	stimuli	Gloss		
65	Present-SG	E	خودکارها زانو می زَنه.	xodkar-ha pen-pl the pens <i>the pens kneels.</i> <i>the pens kneel.</i>	zanu kneeling	mi-zæn-e IND-strike-3SG
66	Present-SG	E	بلندگوها موافقت می کنه.	bolændgu-ha loudspeaker-pl the loudspeakers <i>the loudspeakers agrees.</i> <i>the loudspeakers agree.</i>	movafeqæt agreeing	mi-kon-e IND-DO-3SG
67	Present-SG	E	گوجه ها فکر می کنه.	goje-ha tomato-pl the tomatoes <i>the tomatoes thinks.</i> <i>the tomatoes think.</i>	fekr thinking	mi-kon-e IND-DO-3SG
68	Present-SG	E	نخودها دعوا می کنه.	noxod-ha pea-pl the peas <i>the peas quarrels.</i> <i>the peas quarrel.</i>	da'va quarreling	mi-kon-e IND-DO-3SG
69	Present-SG	E	کامپیوترها تعظیم می کنه.	kamputer-ha computer-pl the computers <i>the computers bows.</i> <i>the computers bow.</i>	ta'zim bowing	mi-kon-e IND-DO-3SG
70	Present-SG	E	پنجره ها نرمش می کنه.	pænjære-ha window-pl the windows <i>the windows exercises.</i> <i>the windows exercise.</i>	jærmesh exercising	mi-kon-e IND-DO-3SG
71	Present-SG	F	گلابیها خورده میشه.	golabi-ha pear-pl the pears <i>the pears is eaten.</i> <i>the pears are eaten.</i>	xorde eaten	mi-sh-e IND-become-3SG
72	Present-SG	F	جورابها پوشیده میشه.	jurab-ha sock-pl the socks <i>the socks is worn.</i> <i>the socks are worn.</i>	pushide worn	mi-sh-e IND-become-3SG

Table A-3. Continued

item	conditon	VT	stimuli	Gloss		
73	Present-SG	F	داستان ها خوانده ميشه.	dastan-ha story-pl	xande read	mi-sh-e IND-become-3SG
				the stories is read. <i>the stories are read.</i>		
74	Present-SG	F	دستمال ها خريده ميشه.	dæstmal-ha handkerchief-pl	xæride bought	mi-sh-e IND-become-3SG
				the handkerchiefs is bought. <i>the handkerchiefs are bought.</i>		
75	Present-SG	F	دامن ها دوخته ميشه.	damæn-ha skirt-pl	duxte sewn	mi-sh-e IND-become-3SG
				the skirts is sewn. <i>the skirts are sewn.</i>		
76	Present-SG	F	تپه ها ديده ميشه.	tæpe-ha hill-pl	dide seen	mi-sh-e IND-become-3SG
				the hills is seen. <i>the hills are seen.</i>		
77	Present-SG	F	بشقابها شسته ميشه.	boshqab-ha plate-pl	shoste washed	mi-sh-e IND-become-3SG
				the plates is washed. <i>the plates are washed.</i>		
78	Present-SG	F	قندان ها شكسته ميشه.	qændan-ha sugar bowl-pl	shekæste broken	mi-sh-e IND-become-3SG
				the sugar bowls is broken. <i>the sugar bowls are broken.</i>		
79	Present-SG	F	چمدان ها فروخته ميشه.	chæmedan-ha suitcase-pl	foruxte sold	mi-sh-e IND-become-3SG
				the suitcases is sold. <i>the suitcases are sold.</i>		
80	Present-SG	F	توت فرنگي ها چيده ميشه.	tut fæærængi-ha strawberry-pl	chide picked	mi-sh-e IND-become-3SG
				the strawberries is picked. <i>the strawberries are picked.</i>		

Table A-3. Continued

item	conditon	VT	stimuli	Gloss		
81	Present-SG	F	ژاکت ها بافته میشه.	zhaket-ha sweater-pl	bafte knitted	mi-sh-e IND-become-3SG
				the sweaters is knitted. <i>the sweaters are knitted.</i>		
82	Present-SG	F	عینک ها شمرده میشه.	einæk-ha eye-glass-pl	shomorde counted	mi-sh-e IND-become-3SG
				the eye-glasses is counted. <i>the eye-glasses are counted.</i>		
83	Present-SG	F	انگشتر ها فرستاده میشه.	ængoshtær-ha ring-pl	ferestade sent	mi-sh-e IND-become-3SG
				the rings is sent. <i>the rings are sent.</i>		
84	Present-SG	F	هویج ها پخته میشه.	hævij-ha carrot-pl	poxte cooked	mi-sh-e IND-become-3SG
				the carrots is cooked. <i>the carrots are cooked.</i>		
85	Present-SG	G	میزها چوبی به.	miz-ha table-pl	chubi wooden	ye be-PRES-3SG
				the tables is wooden. <i>the tables are wooden.</i>		
86	Present-SG	G	مدادها قرمز.	medad-ha pencil-pl	qermez red	e be-PRES-3SG
				the pencils is red. <i>the pencils are red.</i>		
87	Present-SG	G	سیبها سفتیه.	sib-ha apple-pl	seft crisp	e be-PRES-3SG
				the apples is crisp. <i>the apples are crisp.</i>		
88	Present-SG	G	گوجهها تازه س.	goje-ha tomato-pl	taze fresh	æs be-PRES-3SG
				the tomatoes is fresh. <i>the tomatoes are fresh.</i>		

Table A-3. Continued

item	conditon	VT	stimuli	Gloss		
89	Present-SG	G	خانه ها دوره.	xane-ha house-pl the houses is far. <i>the houses are far.</i>	dur far	e be-PRES-3SG
90	Present-SG	G	نرده ها فلزی په.	nærde-ha fence-pl the fences is metallic. <i>the fences are metallic.</i>	felezi metallic	ye be-PRES-3SG
91	Present-SG	G	پله ها سنگی په.	pele-ha stair-pl the stairs is made of stone. <i>the stairs are made of stone.</i>	sængi made of stone	ye be-PRES-3SG
92	Present-SG	G	صندلی ها چرمی په.	sændæli-ha chair-pl the chairs is leather. <i>the chairs are leather.</i>	chærmi leather	ye be-PRES-3SG
93	Present-SG	G	قیر ها سیاهه .	qir-ha tar-pl the tar is black. <i>the tar is black.</i>	siyah black	e be-PRES-3SG
94	Present-SG	G	مدرسه ها نزدیکه.	mædrese-ha school-pl the schools is near. <i>the schools are near.</i>	næzdik near	e be-PRES-3SG
95	Present-SG	G	تخت ها بزرگه.	tæxt-ha bed-pl the beds is big. <i>the beds are big.</i>	bozorg big	e be-PRES-3SG
96	Present-SG	G	برفها سفیده.	bærf-ha snow-pl the snows is white. <i>the snow is white.</i>	sefid white	e be-PRES-3SG

Table A-3. Continued

item	conditon	VT	stimuli	Gloss		
97	Present-SG	G	گوشواره ها قشنگه.	gushvare-ha ear ring-pl the ear rings is beautiful. <i>the ear rings are beautiful.</i>	qæshæng beautiful	e be-PRES-3SG
98	Present-SG	G	شال ها ابریشمی په.	shal-ha shawl-pl the shawls is silk. <i>the shawls are silk.</i>	brishæmi silk	ye be-PRES-3SG
99	Present-SG	H	زمینها سیراب میشه.	zæmin-ha land-pl the lands becomes saturated. <i>the lands are saturated.</i>	sirab saturated	mi-sh-e IND-become-3SG
100	Present-SG	H	ساعتها گم میشه.	sa'æt-ha watch-pl the watches becomes lost. <i>the watches are lost.</i>	gom lost	mi-sh-e IND-become-3SG
101	Present-SG	H	لکه ها پاک میشه.	læke-ha stain-pl the stains becomes wiped. <i>the stains are wiped.</i>	pak wiped	mi-sh-e IND-become-3SG
102	Present-SG	H	سبزی ها پژمرده میشه.	sæbzi-ha herb-pl the herbs becomes withered/faded. <i>the herbs are withered/faded.</i>	pæzhmorde withered/faded	mi-sh-e IND-become-3SG
103	Present-SG	H	قایق ها غرق میشه.	qayeq-ha boat-pl the boats becomes sunk. <i>the boats are sunk.</i>	qærq sunk	mi-sh-e IND-become-3SG
104	Present-SG	H	بادکنک ها ول میشه.	badkonak-ha balloon-pl the balloons becomes floated away. <i>the balloons are floated away.</i>	vel floated away	mi-sh-e IND-become-3SG

Table A-3. Continued

item	conditon	VT	stimuli	Gloss		
105	Present-SG	H	بالونها رها ميشه.	balon-ha hot air balloon- pl the hot air balloons	ræha floated away becomes floated away. <i>the hot air balloons are floated away.</i>	mi-sh-e IND-become-3SG
106	Present-SG	H	انبارها خراب ميشه.	ænbar-ha warehouse-pl the warehouses	xærab ruined becomes ruined <i>the warehouses are ruined</i>	mi-sh-e IND-become-3SG
107	Present-SG	H	سکه ها پيدا ميشه.	seke-ha coin-pl the coins	peida found becomes found. <i>the coins are found.</i>	mi-sh-e IND-become-3SG
108	Present-SG	H	سیمان ها سخت ميشه.	siman-ha cement-pl the cement	sæxt set becomes set. <i>the cement is set.</i>	mi-sh-e IND-become-3SG
109	Present-SG	H	بستنی ها آب ميشه.	bæstæni-ha ice-cream-pl the ice-cream	ab water becomes melted. <i>the ice-cream is melted.</i>	mi-sh-e IND-become-3SG
110	Present-SG	H	رنگها خشک ميشه.	ræng-ha paint-pl the paint	xoshk dry becomes dry. <i>the paint dries.</i>	mi-sh-e IND-become-3SG
111	Present-SG	H	ورزشگاه ها نابود ميشه.	varzeshgah-ha stadium-pl the stadiums	nabud ruined becomes ruined. <i>the stadiums are ruined.</i>	mi-sh-e IND-become-3SG
112	Present-SG	H	تخم مرغ ها تموم ميشه.	toxm-e morq- ha egg-EZ hen-pl the eggs	tæmum end becomes end. <i>the eggs run out.</i>	mi-sh-e IND-become-3SG

Table A-4. List of the stimuli for judgment experiment (Condition: Present Plural)

item	condition	VT	stimuli	gloss		
1	Present-PL	A	طناب ها گره می خورن.	tænab-ha rope-pl the ropes become knotted. <i>the ropes become knotted.</i>	gere knot	mi-xor-æn IND-collide-3PL
2	Present-PL	A	زنجیر ها پیچ می خورن.	zænjir-ha the chains become twisted. the chains become twisted.	pich	mi-xor-æn
3	Present-PL	A	درها رنگ می خورن.	dær-ha door-pl the doors become painted. <i>the doors become painted.</i>	ræng paint	mi-xor-æn IND-collide-3PL
4	Present-PL	A	فرش ها خاک می خورن.	færsh-ha rug-pl the rugs become dusty. <i>the rugs become dusty.</i>	xak dust	mi-xor-æn IND-collide-3PL
5	Present-PL	A	کتابخونه ها رونق می گیرن.	ketab xune-ha library-pl the libraries flourish. <i>the libraries flourish.</i>	ronæq flourishing	mi-gir-æn IND-take-3PL
6	Present-PL	A	دفتر ها باقی می مونن.	dæftær-ha notebook-pl the notebooks remain. <i>the notebooks remain.</i>	baqi left	mi-mun-æn IND-remain-3PL
7	Present-PL	A	سقفها فرو می ریزن.	sæqf-ha roof-pl the roofs collapse. <i>the roofs collapse.</i>	foru down	mi-riz-æn IND-collapse-3PL
8	Present-PL	A	گردوها غل می خورن.	gerdu-ha walnut-pl the walnuts spin. <i>the walnuts spin.</i>	qel spinning	mi-xor-æn IND-collide-3PL

Table A-4. Continued

item	condition	VT	stimuli	gloss		
9	Present-PL	A	بسته ها برگشت می خورن.	bæste-ha package-pl the packages return. <i>the packages return.</i>	bærgæsht returning	mi-xor-æn IND-collide-3PL
10	Present-PL	A	کفش ها سر می خورن.	kæfsh-ha shoe-pl the shoes slid. <i>the shoes slid.</i>	sor sliding	mi-xor-æn IND-collide-3PL
11	Present-PL	A	میوه ها هدر می رن.	mive-ha fruit-pl the fruits are waste. <i>the fruits are waste.</i>	hædær wasting	mi-r-æn IND-go-3PL
12	Present-PL	A	برگ ها تکان می خورن.	bærg-ha leaf-pl the leaves sway. <i>the leaves sway.</i>	tekan swaying	mi-xor-æn IND-collide-3PL
13	Present-PL	A	سنگ ها فرو می رن.	sæng-ha stone-pl the stones sink. <i>the stones sink.</i>	foru sinking	mi-r-æn IND-go-3PL
14	Present-PL	A	تخته ها شناور می مونن.	taxte-ha board-pl the boards are floating. <i>the boards are floating.</i>	shenavær floating	mi-mun-æn IND-remain-3PL
15	Present-PL	B	لوبیابها جوانه می زنن.	lubia-ha bean-pl the beans sprout. <i>the beans sprout.</i>	jævane sprout	mi-zæn-æn IND-strike-3PL
16	Present-PL	B	میخکها گل می کنن.	mixæk-ha carnation the carnations flower. <i>the carnations flower.</i>	gol flower	mi-kon-æn IND-DO-3PL

Table A-4. Continued

item	condition	VT	stimuli	gloss		
17	Present-PL	B	ساقه ها برگ می دن.	saqe-ha stem-pl the stems buds. <i>the stems bud.</i>	bærg leaf	mi-d-æn IND-give-3PL
18	Present-PL	B	دونه ها رشد می کنن.	dune-ha seed-pl the seeds grow. <i>the seeds grow.</i>	roshd growing	mi-kon-æn IND-DO-3PL
19	Present-PL	B	طوفان ها فرو می شینن.	tufan-ha storm-pl the storms subside. <i>the storms subside.</i>	foru subsiding	mi-shin-æn IND-sit-3PL
20	Present-PL	B	خمیر ها ور می آن.	xæmir-ha dough-pl the dough raise. <i>the dough raises.</i>	vær raising	mi-a-n IND-come-3PL
21	Present-PL	B	دست ها ورم می کنن.	dæst-ha hand-pl the hands swell. <i>the hands swell.</i>	væræm swelling	mi-kon-æn IND-DO-3PL
22	Present-PL	B	زخم ها جوش می خورن.	zæxm-ha sore-pl the sores scab over. <i>the sores scab over.</i>	jush scabbing over	mi-xor-æn IND-collide-3PL
23	Present-PL	B	پاها تاول می زنن.	pa-ha foot-pl the feet blister. <i>the feet blister.</i>	tavæl blistering	mi-zæn-æn IND-strike-3PL
24	Present-PL	B	آهن ها زنگ می زنن.	ahæn-ha iron-pl the irons rust. <i>the irons rust.</i>	zæng rust	mi-zæn-æn IND-strike-3PL

Table A-4. Continued

item	condition	VT	stimuli	gloss		
25	Present-PL	B	شاخه ها شکوفه می کنند.	shaxe-ha branch-pl the branches blossom. <i>the branches blossom.</i>	shokufe blossom	mi-kon-æn IND-DO-3PL
26	Present-PL	B	جوانه ها غنچه می کنند.	jævane-ha twig-pl the twigs bud. <i>the twigs bud.</i>	qonche bud	mi-kon-æn IND-DO-3PL
27	Present-PL	B	خیارها کپک می زنن.	xiyar-ha cucumber-pl the cucumbers mold. <i>the cucumbers mold.</i>	kæpæk mold	mi-zæn-æn IND-strike-3PL
28	Present-PL	B	گندمها ریشه می کنند.	gændom-ha wheat-pl the wheat take root. <i>the wheat takes root.</i>	rishe root	mi-kon-æn IND-DO-3PL
29	Present-PL	C	لامپها نور می دن.	lamp-ha lamp-pl the lamps give light. <i>the lamps give light.</i>	nur light	mi-d-æn IND-give-3PL
30	Present-PL	C	روزنامه ها خُش خُش می کنند.	ruzname-ha newspaper-pl the newspapers rustle. <i>the newspapers rustle.</i>	xesh xesh rustling	mi-kon-æn IND-DO-3PL
31	Present-PL	C	آش ها قُل می زنن.	ash-ha porridge-pl the porridge bubble. <i>the porridge bubbles.</i>	qol bubble	mi-zæn-æn IND-strike-3PL
32	Present-PL	C	آتشفشانها فوران می کنند.	atæshfeshan- ha volcano-pl the volcanoes gush. <i>the volcanoes gush.</i>	fæværan gush	mi-kon-æn IND-DO-3PL

Table A-4. Continued

item	condition	VT	stimuli	gloss		
33	Present-PL	C	بشکه ها نشت می کنن.	boshke-ha barrel-pl the barrels ooze. <i>the barrels ooze.</i>	næsht ooze	mi-kon-æn IND-DO-3PL
34	Present-PL	C	سکه ها جرینگ جرینگ می کنن.	seke-ha coin-pl the coins jingle. <i>the coins jingle.</i>	jering jering jingle	mi-kon-æn IND-DO-3PL
35	Present-PL	C	بادها زوزه می کشن.	bad-ha wind-pl the winds moan. <i>the winds moan.</i>	zuze moan	mi-kesh-æn IND-pull-3PL
36	Present-PL	C	چراغها سو سو می زنن.	cheraq-ha light-pl the lights flicker. <i>the lights flicker.</i>	su su flicker	mi-zæn-æn IND-strike-3PL
37	Present-PL	C	مته ها وزوز می کنن.	mæte-ha drill-pl the drills buzz. <i>the drills buzz.</i>	vez vez buzz	mi-kon-æn IND-DO-3PL
38	Present-PL	C	لیوان ها برق می زنن.	livan-ha glass-pl the glasses gleam. <i>the glasses gleam.</i>	bærq gleaming	mi-zæn-æn IND-strike-3PL
39	Present-PL	C	سیم ها جرقه می زنن.	sim-ha cord-pl the electrical cords spark. <i>the electrical cords spark.</i>	jæræqe spark	mi-zæn-æn IND-strike-3PL
40	Present-PL	C	اره ها سر و صدا می کنن.	ærre-ha saw-pl the saws make noise. <i>the saws make noise.</i>	sær o seda noise	mi-kon-æn IND-DO-3PL

Table A-4. Continued

item	condition	VT	stimuli	gloss		
41	Present-PL	C	پنجره ها تق تق می ککن.	pænjære-ha window-pl the windows rattle. <i>the windows rattle.</i>	tæq tæq rattling	mi-kon-æn IND-DO-3PL
42	Present-PL	C	دوربین ها فلاش می زنن.	durbin-ha camera-pl the cameras flash. <i>the cameras flash.</i>	felash flashing	mi-zæn-æn IND-strike-3PL
43	Present-PL	D	فرستنده ها مخابره می ککن.	ferestænde-ha beacon-pl the beacons transmit. <i>the beacons transmit.</i>	moxabere transmitting	mi-kon-æn IND-DO-3PL
44	Present-PL	D	دوربین ها عکس می گیرن.	durbin-ha camera-pl the cameras photograph. <i>the cameras photograph.</i>	æks photo	mi-gir-æn IND-take-3PL
45	Present-PL	D	هلیکوپترها چرخ می زنن.	helikopter-ha helicopter-pl the helicopters rotate. <i>the helicopters rotate.</i>	chærx rotating	mi-zæn-æn IND-strike-3PL
46	Present-PL	D	قایق ها فرار می ککن.	qayeq-ha boat-pl the boats escape. <i>the boats escape.</i>	færar escaping	mi-kon-æn IND-DO-3PL
47	Present-PL	D	رادیو ها اطلاع می دن.	radiyo-ha radio-pl the radios inform. <i>the radios inform.</i>	ettela information	mi-d-æn IND-give-3PL
48	Present-PL	D	آسانسورها بالا می رن.	asansor-ha elevator-pl the elevators go up. <i>the elevators go up.</i>	bala up	mi-r-æn IND-go-3PL

Table A-4. Continued

item	condition	VT	stimuli	gloss		
49	Present-PL	D	تاکسی ها دور می زنن.	taksi-ha taxi-pl the taxies turn around. <i>the taxies turn around.</i>	dowr round	mi-zæn-æn IND-strike-3PL
50	Present-PL	D	منه ها سوراخ می کنن.	mæte-ha drill-pl the drills make a hole. <i>the drills make a hole.</i>	surax hole	mi-kon-æn IND-DO-3PL
51	Present-PL	D	وانت بارها قاچاق می کنن.	vanet bar-ha truck-pl the trucks smuggle. <i>the trucks smuggle.</i>	qachaq smuggling	mi-kon-æn IND-DO-3PL
52	Present-PL	D	تانک ها حمله می کنن.	tank-ha tank-pl the tanks attack. <i>the tanks attack.</i>	hæmle attack	mi-kon-æn IND-DO-3PL
53	Present-PL	D	پنکه ها خنک می کنن.	pænke-ha fan-pl the fans cool. <i>the fans cool.</i>	xonæk cool	mi-kon-æn IND-DO-3PL
54	Present-PL	D	هواپیماها پرواز می کنن.	hæva peima-ha airplane-pl the airplanes fly. <i>the airplanes fly.</i>	pærvaz flight	mi-kon-æn IND-DO-3PL
55	Present-PL	D	بلندگوها اعلام می کنن.	bolændgoo-ha loudspeaker-pl the loudspeakers announce. <i>the loudspeakers announce.</i>	elam announcing	mi-kon-æn IND-DO-3PL
56	Present-PL	D	رادارها شناسایی می کنن.	radar-ha radar-pl the radars identify. <i>the radars identify.</i>	shenasa'i identify	mi-kon-æn IND-DO-3PL

Table A-4. Continued

item	condition	VT	stimuli	gloss		
57	Present-PL	E	باقلواها چشمک می زنن.	baqlava-ha baklava-pl the baklavas <i>the baklavas</i>	cheshmæk winking wink. <i>wink.</i>	mi-zæn-æn IND-strike-3PL
58	Present-PL	E	قابلمه ها تقلب می کنن.	qablame-ha pot-pl the pots <i>the pots</i>	tæqælob cheating cheat. <i>cheat.</i>	mi-kon-æn IND-DO-3PL
59	Present-PL	E	مداد ها اخم می کنن.	medad-ha pencil-pl the pencils <i>the pencils</i>	æxm frowning frown. <i>frown.</i>	mi-kon-æn IND-DO-3PL
60	Present-PL	E	جاروهاراه می رن.	jaru-ha broom-pl the broom <i>the broom</i>	rah way walk. <i>walk.</i>	mi-r-æn IND-go-3PL
61	Present-PL	E	دیوارها سوت می زنن.	divar-ha wall-pl the walls <i>the walls</i>	sut whistling whistle. <i>whistle.</i>	mi-zæn-æn IND-strike-3PL
62	Present-PL	E	روسری ها لبخند می زنن.	rusæri-ha scarf-pl the scarves <i>the scarves</i>	læbxænd smiling smile. <i>smile.</i>	mi-zæn-æn IND-strike-3PL
63	Present-PL	E	عطرها گریه می کنن.	ætr-ha perfume-pl the perfumes <i>the perfumes</i>	gerye crying cry. <i>cry.</i>	mi-kon-æn IND-DO-3PL
64	Present-PL	E	لوله ها ورزش می کنن.	lule-ha pipe-pl the pipes <i>the pipes</i>	værzesh exercising exercise. <i>exercise.</i>	mi-kon-æn IND-DO-3PL

Table A-4. Continued

item	condition	VT	stimuli	gloss		
65	Present-PL	E	خودکارها زانو می زنن.	xodkar-ha pen-pl the pens kneel. <i>the pens kneel.</i>	zanu kneeling	mi-zæn-æn IND-strike-3PL
66	Present-PL	E	بلند گوها موافقت می کنند.	bolændgu-ha loudspeaker-pl the loudspeakers agree. <i>the loudspeakers agree.</i>	movafeqæt agreeing	mi-kon-æn IND-DO-3PL
67	Present-PL	E	گوجه ها فکر می کنند.	goje-ha tomato-pl the tomatoes think. <i>the tomatoes think.</i>	fekr thinking	mi-kon-æn IND-DO-3PL
68	Present-PL	E	نخود ها دعوا می کنند.	noxod-ha pea-pl the peas quarrel. <i>the peas quarrel.</i>	da'va quarreling	mi-kon-æn IND-DO-3PL
69	Present-PL	E	کامپیوترها تعظیم می کنند.	kamputer-ha computer-pl the computers bow. <i>the computers bow.</i>	ta'zim bowing	mi-kon-æn IND-DO-3PL
70	Present-PL	E	پنجره ها نرمش می کنند.	pænjære-ha window-pl the windows exercise. <i>the windows exercise.</i>	jærmesh exercising	mi-kon-æn IND-DO-3PL
71	Present-PL	F	گلابیها خورده میشوند.	golabi-ha pear-pl the pears are eaten. <i>the pears are eaten.</i>	xorde eaten	mi-sh-æn IND-become-3PL
72	Present-PL	F	جوراب ها پوشیده میشوند.	jurab-ha sock-pl the socks are worn. <i>the socks are worn.</i>	pushide worn	mi-sh-æn IND-become-3PL

Table A-4. Continued

item	condition	VT	stimuli	gloss		
73	Present-PL	F	داستان ها خوانده ميشن.	dastan-ha story-pl	xande read	mi-sh-æn IND-become-3PL
				the stories are read. <i>the stories are read.</i>		
74	Present-PL	F	دستمال ها خريده ميشن.	dæstmal-ha handkerchief-pl	xæride bought	mi-sh-æn IND-become-3PL
				the handkerchiefs are bought. <i>the handkerchiefs are bought.</i>		
75	Present-PL	F	دامن ها دوخته ميشن.	damæn-ha skirt-pl	duxte sewn	mi-sh-æn IND-become-3PL
				the skirts are sewn. <i>the skirts are sewn.</i>		
76	Present-PL	F	تپه ها ديده ميشن.	tæpe-ha hill-pl	dide seen	mi-sh-æn IND-become-3PL
				the hills are seen. <i>the hills are seen.</i>		
77	Present-PL	F	بشقابها شسته ميشن.	boshqab-ha plate-pl	shoste washed	mi-sh-æn IND-become-3PL
				the plates are washed. <i>the plates are washed.</i>		
78	Present-PL	F	قندان ها شكسته ميشن.	qændan-ha sugar bowl-pl	shekæste broken	mi-sh-æn IND-become-3PL
				the sugar bowls are broken. <i>the sugar bowls are broken.</i>		
79	Present-PL	F	چمدان ها فروخته ميشن.	chæmedan-ha suitcase-pl	foruxte sold	mi-sh-æn IND-become-3PL
				the suitcases are sold. <i>the suitcases are sold.</i>		
80	Present-PL	F	توت فرنگي ها چيده ميشن.	tut fæærængi-ha strawberry-pl	chide picked	mi-sh-æn IND-become-3PL
				the strawberries are picked. <i>the strawberries are picked.</i>		

Table A-4. Continued

item	condition	VT	stimuli	gloss		
81	Present-PL	F	ژاکت ها بافته میشن.	zhaket-ha sweater-pl	bafte knitted	mi-sh-æn IND-become-3PL
				the sweaters are knitted. <i>the sweaters are knitted.</i>		
82	Present-PL	F	عینک ها شمرده میشن.	einæk-ha eye-glass-pl	shomorde counted	mi-sh-æn IND-become-3PL
				the eye-glasses are counted. <i>the eye-glasses are counted.</i>		
83	Present-PL	F	انگشتر ها فرستاده میشن.	ængoshtær-ha ring-pl	ferestade sent	mi-sh-æn IND-become-3PL
				the rings are sent. <i>the rings are sent.</i>		
84	Present-PL	F	هویج ها پخته میشن.	hævij-ha carrot-pl	poxte cooked	mi-sh-æn IND-become-3PL
				the carrots are cooked. <i>the carrots are cooked.</i>		
85	Present-PL	G	میزها چوبی ین.	miz-ha table-pl	chubi wooden	æn be-PRES-3PL
				the tables are wooden. <i>the tables are wooden.</i>		
86	Present-PL	G	مدادها قرمز ین.	medad-ha pencil-pl	qermez red	æn be-PRES-3PL
				the pencils are red. <i>the pencils are red.</i>		
87	Present-PL	G	سیبها سفت ین.	sib-ha apple-pl	seft crisp	æn be-PRES-3PL
				the apples are crisp. <i>the apples are crisp.</i>		
88	Present-PL	G	گوجهها تازه ین.	goje-ha tomato-pl	taze fresh	æn be-PRES-3PL
				the tomatoes are fresh. <i>the tomatoes are fresh.</i>		

Table A-4. Continued

item	condition	VT	stimuli	gloss		
89	Present-PL	G	خانه ها دورن.	xane-ha house-pl the houses are far. <i>the houses are far.</i>	dur far	æn be-PRES-3PL
90	Present-PL	G	نرده ها فلزی ین.	nærde-ha fence-pl the fences are metallic. <i>the fences are metallic.</i>	felezi metallic	æn be-PRES-3PL
91	Present-PL	G	پله ها سنگی ین.	pele-ha stair-pl the stairs are made of stone. <i>the stairs are made of stone.</i>	sængi made of stone	æn be-PRES-3PL
92	Present-PL	G	صندلی ها چرمی ین.	sændæli-ha chair-pl the chairs are leather. <i>the chairs are leather.</i>	chærmi leather	æn be-PRES-3PL
93	Present-PL	G	قیر ها سیاهن.	qir-ha tar-pl the tar are black. <i>the tar is black.</i>	siyah black	æn be-PRES-3PL
94	Present-PL	G	مدرسه ها نزدیکن.	mædrese-ha school-pl the schools are near. <i>the schools are near.</i>	næzdik near	æn be-PRES-3PL
95	Present-PL	G	تخت ها بزرگن.	tæxt-ha bed-pl the beds are big. <i>the beds are big.</i>	bozorg big	æn be-PRES-3PL
96	Present-PL	G	برفها سفیدن.	bærf-ha snow-pl the snow are white. <i>the snow is white.</i>	sefid white	æn be-PRES-3PL

Table A-4. Continued

item	condition	VT	stimuli	gloss		
97	Present-PL	G	گوشواره ها قشنگن.	gushvare-ha ear ring-pl the ear rings are beautiful. <i>the ear rings are beautiful.</i>	qæshæng beautiful	æn be-PRES-3PL
98	Present-PL	G	شال ها ابریشمی ین.	shal-ha shawl-pl the shawls are silk. <i>the shawls are silk.</i>	brishæmi silk	æn be-PRES-3PL
99	Present-PL	H	زمینها سیراب میشن.	zæmin-ha land-pl the lands become saturated. <i>the lands are saturated.</i>	sirab saturated	mi-sh-æn IND-become-3PL
100	Present-PL	H	ساعتها گم میشن.	sa'æt-ha watch-pl the watches become lost. <i>the watches are lost.</i>	gom lost	mi-sh-æn IND-become-3PL
101	Present-PL	H	لکه ها پاک میشن.	læke-ha stain-pl the stains become wiped. <i>the stains are wiped.</i>	pak wiped	mi-sh-æn IND-become-3PL
102	Present-PL	H	سبزی ها پژمرده میشن.	sæbzi-ha vegetable-pl the herbs become withered/faded. <i>the herbs are withered/faded.</i>	pæzhmorde withered/faded	mi-sh-æn IND-become-3PL
103	Present-PL	H	قایق ها غرق میشن.	qayeq-ha boat-pl the boats become sunk. <i>the boats are sunk.</i>	qærq sunk	mi-sh-æn IND-become-3PL
104	Present-PL	H	بادکنک ها ول میشن.	badkonak-ha balloon-pl the balloons become floated away. <i>the balloons are floated away.</i>	vel floated away	mi-sh-æn IND-become-3PL

Table A-4. Continued

item	condition	VT	stimuli	gloss		
105	Present-PL	H	بالونها رها ميشن.	balon-ha balloon-pl	ræha floated away	mi-sh-æn IND-become-3PL
				the hot air balloons become floated away. <i>the hot air balloons are floated away.</i>		
106	Present-PL	H	انبارها خراب ميشن.	ænbar-ha warehouse-pl	xærab ruined	mi-sh-æn IND-become-3PL
				the warehouses become ruined <i>the warehouses are ruined</i>		
107	Present-PL	H	سکه ها پيداميشن.	seke-ha coin-pl	peida found	mi-sh-æn IND-become-3PL
				the coins become found. <i>the coins are found.</i>		
108	Present-PL	H	سيمان ها سخت ميشن.	siman-ha cement-pl	sæxt set	mi-sh-æn IND-become-3PL
				the cement become set. <i>the cement becomes set.</i>		
109	Present-PL	H	بستنی ها آب ميشن.	bæstæni-ha ice-cream-pl	ab water	mi-sh-æn IND-become-3PL
				the ice-cream become melted. <i>the ice-cream is melted.</i>		
110	Present-PL	H	رنگها خشک ميشن.	ræng-ha paint-pl	xoshk dry	mi-sh-æn IND-become-3PL
				the paint become dry. <i>the paint dries.</i>		
111	Present-PL	H	ورزشگاه ها نابود ميشن.	varzeshgah-ha stadium-pl	nabud ruined	mi-sh-æn IND-become-3PL
				the stadiums become ruined. <i>the stadiums are ruined.</i>		
112	Present-PL	H	تخم مرغ ها تمام ميشن.	tox-m-e morq-ha egg-EZ hen-pl	tæmam end	mi-sh-æn IND-become-3PL
				the eggs become end. <i>the eggs run out.</i>		

Table A-5. List of the filler stimuli for judgment experiment (Condition: past)

item	stimuli	gloss							
1	من و فریبرز مسایل ریاضی رو حل کردیم.	mæn	væ	færibo:z	mæsa'el-e	riyazi	ro	hæl	kæ:rd-im
		I	and	Fariborz	problems-EZ	math	OM	solving	did-1PL
		<i>Fariborz and I solved math problems.</i>							
2	من و احسان هوای سرد رو دوست داشتیم.	mæn	væ	ehsan	hæva-ye	sæ:rd	ro	dust	dasht-im
		I	and	Ehsan	weather-EZ	cold	OM	loving	dad-1PL
		<i>Ehsan and I liked cold weather.</i>							
3	شما و مهشید امتحان دادین.	shoma	væ	mæ:shid		emtehan			dad-in
		you	and	Mahshid		exam			gave-2PL
		<i>Mahshid and you took the exam.</i>							
4	شما و حسن آب ماهی ها رو عوض کردین.	shoma	væ	hæsæn	ab-e	mahi-ha	ro	ævæz	kæ:rd-in
		you	and	Hasan	water-EZ	fish-pl	OM	changing	did-2PL
		<i>Hasan and you changed the water of the fish bowl.</i>							
5	سارا و من از موزه دیدن کردیم.	sara	væ	mæn	æz	muze	didæn		kæ:rd-im
		Sara	and	I	from	museum	visiting		did-1PL
		<i>Sara and I visited the museum.</i>							
6	شهاب و شما درسها رو مرور کردین.	shæhab	væ	shoma	dæ:rs-ha	ro	morur		kæ:rd-in
		Shahab	and	you	lesson-pl	OM	reviewing		did-2PL
		<i>Shahab and you reviewed the lessons.</i>							
7	کاوه و من همکلاس بودیم.	kaveh	væ	mæn		hæmkelas			bud-im
		Kaveh	and	I		classmate			were-1PL
		<i>Kaveh and I were classmates.</i>							
8	نسترن و شما گلها رو آب دادین.	næstæræn	væ	shoma		gol-ha	ro	ab	dad-in
		Nastaran	and	you		flower-pl	OM	water	gave-2PL
		<i>Nastaran and you watered the plants.</i>							

Table A-5. Continued

item	stimuli	gloss						
9	شما و نسرين با هم همكاري كردين.	shoma	væ	næsrin	ba	hæm	hæmkari	kærd-in
		you	and	Nasrin	with	each other	cooperating	did-2PL
		<i>Nasrin and you were cooperating with each other.</i>						
10	مليحه و من شيشه ها رو پاك كرديم.	mælihe	væ	mæn		shishe-ha	ro pak	kærd-im
		Maliheh	and	I		glass-pl	OM cleaning	did-1PL
		<i>Maliheh and I cleaned the glasses.</i>						
11	شما و خواهرتان خوب آشپزي كردين.	shoma	væ	xahær-etan		ashpazi		kærd-in
		you	and	sister-your		cooking		did-2PL
		<i>you and your sister cooked well.</i>						
12	سيروس و من قسم خورديم.	syrus	væ	mæn		qæsæm		xord-im
		Syrus	and	I		swearing		collided-1PL
		<i>Cyrus and I swore.</i>						
13	شما و ندا نقاشي ها رو رنگ كردين.	shoma	væ	neda		næqashi-ha	ro ræng	kærd-in
		you	and	Neda		drawing-pl	OM painting	did-2PL
		<i>you and Neda painted the drawings.</i>						
14	من و ژاله طناب بازي كرديم.	mæn	væ	zhale		tænab-bazi		kærd-im
		I	and	Zhale		rope-playing		did-1PL
		<i>Zhaleh and I skipped the rope.</i>						
15	شما و مرضيه شاخه هاي اضافي رو قيچي كردين.	shoma	væ	mærziye	shaxe-ha-ye	ezafi	ro qeichi	kærd-in
		you	and	Marziye	branch-pl-EZ	extra	OM scissors	did-2PL
		<i>Marziyeh and you cut the extra branches.</i>						
16	شنيدم كه تو و امير نامزد كردين.	shenid-æm		ke to	væ	amir	namzæd	kærd-in
		heard-I		that you	and	Amir	engaging	did-2PL
		<i>I heard that Amir and you engaged.</i>						

Table A-5. Continued

item	stimuli	gloss						
17	من و شیدا با هم آواز خونندیم.	mæn	væ	sheida	ba hæm	avaz	xund-im	
		I	and	Sheida	together	song	sang-1PL	
		<i>Sheida and I sang together.</i>						
18	مهران و شما منطقه رو نقشه برداری کردین.	mehran	væ	shoma	mæntæqe	ro næqshe	bærdari	kærd-in
		Mehran	and	you	area	OM map	draw	did-2PL
		<i>Mehran and you draw a map of the area.</i>						
19	من و شهرام کتاب رو خلاصه کردیم.	mæn	væ	shæhram	ketab	ro xolase	kærd-im	
		I	and	Shahram	book	OM summarizing	did-1PL	
		<i>Shahram and I summarized the book.</i>						
20	بهروز و تو برنامه ها رو ردیف کردین.	behruz	væ	to	bærname-ha	ro rædif	kærd-in	
		Behruz	and	you	program-pl	OM organizing	did-2PL	
		<i>Behrooz and you organized the programs.</i>						
21	من و شیرین آهوها رو تماشا کردیم.	mæn	væ	shirin	ahu-ha	ro tæmasha	kærd-im	
		I	and	Shirin	deer-pl	OM watching	did-1PL	
		<i>Shirin and I watched the deer.</i>						
22	حمید گفت که رضا و تو کتابها رو جا جا کردین.	hæmid	goft	ke reza	væ to	ketab-ha	ro jabeja	kærd-in
		Hamid	told	that Reza	and you	book-pl	OM moving	did-2PL
		<i>Hamid told that Reza and you moved the books.</i>						
23	شما و سحر تکالیف رو انجام دادین.	shoma	væ	sæhær	tækalif	ro ænjam	dad-in	
		you	and	Sahar	homework	OM doing	gave-2PL	
		<i>Sahar and you did the homework.</i>						
24	من و بهمن حیاط رو جارو کردیم.	mæn	væ	bæhmæn	hæyat	ro jaru	kærd-im	
		I	and	Bahman	yard	OM sweeping	did-1PL	
		<i>Bahman and I swept the yard.</i>						

Table A-5. Continued

item	stimuli	gloss							
25	فرشاد و شما دوستان صمیمی من بودین.	færshad	væ	shoma	dustan-e	sæmimi-e	mæn	bud-in	
		Farshad	and	you	friend-EZ	intimate-EZ	I	were-2PL	
		<i>Farshad and you were my intimate friends.</i>							
26	من و فریبا سخنرانی رو گوش کردیم.	mæn	væ	færiba	soxænrani	ro	gush	kærd-im	
		I	and	Fariba	lecture	OM	ear	did-1PL	
		<i>Fariba and I listened to the lecture.</i>							
27	بیژن و من در یک شرکت کار کردیم.	bizhæn	væ	mæn	dær	yek	sherkæt	kar	kærd-im
		Bijan	and	I	in	one	company	working	did-1PL
		<i>Bijan and I worked in the same company.</i>							
28	من و مهین به هم کمک کردیم.	mæn	væ	mæhin	be	hæm	komæk	kærd-im	
		I	and	Mahin	to	each other	helping	did-1PL	
		<i>Mahin and I helped each other.</i>							
29	سعید و من برای گردش برنامه ریزی کردیم.	sa'id	væ	mæn	bæraye	gærdesh	bærnamerizi	kærd-im	
		Saeed	and	I	for	picnic	planning	did-1PL	
		<i>Saeed and I planed for the picnic.</i>							
30	رویا و تو دیوارها رو تزیین کردین.	roya	væ	to	divar-ha	ro	taz'in	kærd-in	
		Roya	and	you	wall-pl	OM	decorating	did-2PL	
		<i>Roya and you decorated the walls.</i>							
31	تو و احمد در ایستگاه اتوبوس معطل شدین.	to	væ	æhmæd	dær	istgah-e	otobus	mo'ætæl	shod-in
		you	and	Ahmad	in	stop-EZ	bus	waited	became-2pl
		<i>Ahmad and you waited at the bus stop.</i>							
32	من و مادرم هم عقیده بودیم.	mæn	væ	madær-æm		hæm	æqide	bud-im	
		I	and	mother-my		same	idea	were-1PL	
		<i>my mother and I were (people of) the same ideas</i>							

Table A-5. Continued

item	stimuli	gloss								
33	من و لادن با هم عطسه زدیم.	mæn	væ	ladæn	ba-hæm	ætse		zæd-im		
		I	and	Ladan	together	sneezing		hit-1pl		
		<i>Ladan and I sneezed together.</i>								
34	بهنام و تو به بچه ها غذا دادین.	behnam	væ	to	be	bæche-ha	qæza	dad-in		
		Behnam	and	you	to	child-pl	food	gave-2PL		
		<i>Behnam and you fed the children.</i>								
35	من و شعله در خوابگاه دختران کار کردیم.	mæn	væ	sho'le	dær	xabgah-e	doxtær-an	kar	kærd-im	
		I	and	Sholeh	in	dorm-EZ	girl-pl	working	did-1PL	
		<i>Sholeh and I worked in the girls dormitory.</i>								
36	مهرانه گفت که بهنام و شما قبول شدین.	mehrane		goft	ke	behnam	væ	shoma	qæbul	shod-in
		Mehrane		told	that	Behnam	and	you	admitting	became-2pl
		<i>Mehrane told that Behnam and you were admitted.</i>								
37	فرهاد و من با هم کوهنوردی رو تجربه کردیم.	færhad	væ	mæn	ba-hæm	kuh	næværđi	ro	tæjrobe	kærd-im
		Farhad	and	I	together	mountain	climbing	OM	experiencing ...	did-1PL
		<i>Farhad and I experienced the mountain climbing together.</i>								
38	شکوفه و تو در پروژه کار کردین.	shokufe	væ	to	dær	porozhe	kar		kærd-in	
		Shokufe	and	you	in	project	working		did-2PL	
		<i>Shokufeh and you worked in the project.</i>								
39	منوچهر و من همدیگر رو دوست داشتیم.	mænucheħr		væ	mæn		hæmdigær	ro	dust	dasht-im
		Manucheħr		and	I		each other	OM	loving	dad-1PL
		<i>Manoocheħr and I loved each other.</i>								
40	شراره و شما در مسابقه شرکت کردین.	shærare		væ	shoma	dær	mosabeqe	sherkæt		kærd-in
		Sharareħ		and	you	in	competition	participating		did-2PL
		<i>Sharareħ and you participated in the competition.</i>								

Table A-5. Continued

item	stimuli	gloss				
41	مهرنوش جایزه گرفت.	mehrnush	jayeze	gereft		
		mehrnush	prize	took.3SG		
		<i>Mehrnush won the prize</i>				
42	منیژه از موفقیت‌هایش تعریف کرد.	mænizhe	æz	movæfæqiyæt-ha-yæsh	tærif	kærd
		Manizhe	from	success-pl-her	describing	did.3SG
		<i>Manizhe talked of her successes.</i>				
43	پروین سه تا از شعرها رو حفظ کرد.	pærvin	se-ta	æz	she'r-ha	ro hefz
		Parvin	three	of	poem-pl	OM memorizing
		<i>Parvin memorized three of the poems.</i>				
44	مینا با بهرام درس خوند.	mina	ba	bæhram	dærs	xund
		Mina	with	Bahram	lesson	read.3SG
		<i>Mina studied with Bahram.</i>				
45	خسرو سرما خورد.	xosro	særma			xord
		Khosro	cold			collided.3SG
		<i>Bahman got a cold.</i>				
46	حسن تاریخ ایران رو مطالعه کرد.	hæsæn	tarix-e	iran	ro motale'eh	kærd
		Hasan	history-EZ	Iran	OM studying	did.3SG
		<i>Hasan studied the history of Iran.</i>				
47	سیاوش برای شرکت کنندگان تار زد.	siyavæsh	bæraye	sherkæt-konænde-gan	tar	zæd
		Siyæash	for	participant-pl	tar	hit.3SG
		<i>Siyavash played Tar music for the participants.</i>				
48	خسرو نسترن رو صدا کرد.	xosro	næstæræn	ro	seda	kærd
		Khosro	Nastaran	OM	calling	did.3SG
		<i>Khosro called Nastaran.</i>				

Table A-5. Continued

item	stimuli	gloss					
49	شاهین فعالیت خوبی رو تجربه کرد.	shahin Shahin	fæ'aliyæt-e activity-EZ	xub-i good-one	ro OM	tæjrobe experiencing	kærd did.3SG
		<i>Shahin experienced a good activity.</i>					
50	مینو برای مسافرت آماده شد.	minu Minu	bæraye for	mosaferæt Trip	amade preparing	shod became-3SG	
		<i>Minu prepared for the trip.</i>					
51	مرغابی بزرگی در آن طرف دریاچه لانه داشت.	morqabi-ye duck-EZ	bozorg-l big-one	dær an at that	tæræf-e side-EZ	daryache lane lake nest	dasht had.3SG
		<i>a big duck had nest at the other side of the lake.</i>					
52	پرستو ماهی پلو تهیه کرد.	pæræstu Parastu	mahi-polo fish-rice	tæhiye preparing		kærd did.3SG	
		<i>Parastu cooked rice and fish.</i>					
53	حسابدار شرکت درخواست بازنشستگی کرد.	hesabdar-e accountant-EZ	sherkæt company	dærxast-e applying-EZ	bazneshæstegi retirement	kærd did.3SG	
		<i>the accountant of the company applied for retirement.</i>					
54	پرنده به جوجه هایش غذا داد.	pærænde bird	be to	juje-ha-yæsh chick-pl-her	qæza food	dad gave.3SG	
		<i>the bird fed her chicks.</i>					
55	کوروش سه بخش از نوشته ها رو ترجمه کرد.	kurosh Kurosh	se three	bæxsh chapter	æz of	neveshte-ha ro text-pl OM translating	kærd did.3SG
		<i>Kurosh translated three chapters of the texts.</i>					
56	پدر اکرم مریض بود.	pedær-e father-EZ	ækræm Akram	mæriz sick		bud was.3SG	
		<i>Akram's father was sick</i>					

Table A-5. Continued

item	stimuli	gloss				
57	مهشید نگران نمره هایش بود.	mæhshid Mahshid <i>Mahshid worried for her grades.</i>	negæran-e worry-EZ	nomre-ha-yæsh grade-pl-her	bud was.3SG	
58	صدیقه کاغذها رو رنگ کرد.	sediqe Sediqe <i>Sedighe painted the papers.</i>	kaqæz-ha paper-pl	ro OM	ræng painting kærd did.3SG	
59	شبیم در مسابقه شرکت کرد.	shæbnæm Shabnam <i>Shabnam participated in the competition.</i>	dær in	mosabeqe competition	sherkæt participating kærd did.3SG	
60	علی جغرافیا رو دوست داشت.	æli Ali <i>Ali loved geography.</i>	joqrafiya geography	ro OM	dust love dasht had.3SG	
61	حدیث با علی موافق بود.	hædis Hadis <i>Hadis agreed with Ali.</i>	ba with	æli Ali	movafeq agree bud was.3SG	
62	امید به اصفهان سفر کرد.	omid Omid <i>Omid traveled to Isfahan.</i>	be to	esfæhan Esfahan	sæfær traveling kærd did.3SG	
63	منیزه از همکلاسی اش کمک گرفت.	mænizhe Manizhe <i>Manizheh asked help from her classmate.</i>	æz from	hæmkelasi-yæsh classmate-her	komæk help gereft took.3SG	
64	پرستار دارو رو به مریض داد.	pæræstar nurse <i>the nurse gave the medicines to the patient.</i>	daru medicine	ro OM	be to	mæriz patient dad gave.3SG

Table A-5. Continued

item	stimuli	gloss							
65	جمشید دو نامه برای گزنوش پُست کرد.	jæmshid	do	name	bæraye	golnush	post	kærd	
		Jamshid	two	letter	for	Golnush	mailing	did.3SG	
		<i>Jamshid mailed two letters to Goli.</i>							
66	نرگس از نمره هایش راضی بود.	nærges	æz	nomre-ha-yæsh		razi		bud	
		Narges	from	score-PL-her		satisfy		was.3SG	
		<i>Narges was satisfied with her scores.</i>							
67	افسانه برای مادرش یک کیف انتخاب کرد.	æfsane		bæraye	madær-æsh	yek	kif	entexab	kærd
		Afsane		for	mother-her	one	bag	choosing	did.3SG
		<i>Afasaneh chose a bag for her mother.</i>							
68	هدیه گفت که افشین خیلی تلاش کرد.	hedye	goft	ke	æfshin	xeili	tælash	kærd	
		Hedye	told	that	Afshin	a lot	struggling	did.3SG	
		<i>Hedye told that Afshin struggled a lot.</i>							
69	فریدون کار دیگری پیدا کرد.	fereidun	kar-e	digæri	peida			kærd	
		Fereidun	job_EZ	another	finding			did.3SG	
		<i>Fereidun found another job.</i>							
70	همایون گفت که اضافه کاری ها رو پرداخت کردن.	homayun	goft	ke	ezafe-kari-ha	ro	pærdaxt	kærd-æn	
		Homayun	told	that	overtime-pl	OM	paying	did-3PL	
		<i>Homayoon told that they have paid the overtimes.</i>							
71	مهران هدفش رو توضیح داد.	mehran		hædæf-esh	ro	tozih		dad	
		Mehran		goal-his	OM	explaining		gave.3SG	
		<i>Mehran explained his goal to his father.</i>							
72	مهتاب ساعتش رو پیدا کرد.	mæhtab		sa'æt-esh	ro	peida		kærd	
		Mahtab		watch-his	OM	finding		did.3SG	
		<i>Mahtab found her watch.</i>							

Table A-5. Continued

item	stimuli	gloss					
73	شهرام ازدواج کرد.	shæhram Shahram	ezdevaj marrying			kærd did.3SG	
		<i>Shahram married.</i>					
74	ماهی کوچک در رودخانه شنا کرد.	mahi-e fish-EZ	kuchæk little	dær in	rudxane river	shena swimming	kærd did.3SG
		<i>the little fish swam in the river.</i>					
75	پروانه در جشنواره جایزه گرفت.	pærvane Parvaneh	dær in	jæshnvare festival	jayeze prize	gereft took.3SG	
		<i>Parvaneh got a prize in the festival.</i>					
76	سیروس از مستاجرش شکایت کرد.	syrus Cyrus	æz from	mostæjer-æsh lessee-his	shekayæt complaining	kærd did.3SG	
		<i>cyrus complained of his lessee.</i>					
77	فرزانه کتاب رمان رو نقد کرد.	færzane Farzaneh	ketab-e book-EZ	roman novel	ro OM	næqd critisizing	kærd did.3SG
		<i>Farzaneh critisized the novel.</i>					
78	سوسن ملافه ها رو اطو کرد.	susan Susan	mælafe-ha sheet-pl	ro OM	otu ironing	kærd did.3SG	
		<i>Susan ironed the bed sheets.</i>					
79	پریسا با مهرداد بحث کرد.	pærisa Parisa	ba with	mehrdad Mehrdad	bæhs discussing	kærd did.3SG	
		<i>Parisa discussed with Mehrdad.</i>					
80	مریم با مهری تلفنی صحبت کرد.	mæryæm Maryam	ba with	mehri Mehri	telefon-i telephone-on	sohbæt talking	kærd did.3SG
		<i>Maryam talked with Mehri on phone.</i>					

Table A-6. List of the filler stimuli for judgment experiment (Condition: present)

item	stimuli	gloss							
1	من و فریبرز مسایل ریاضی رو حل می کنیم.	mæn	væ	færiboɾz	mæsa'el-e	riyazi	ro	hæl	mi-kon-im
		I	and	Fariborz	problem-EZ	math	OM	solving	IND-do-1PL
		<i>Fariborz and I solve math problem.</i>							
2	من و احسان هوای سرد رو دوست داریم.	mæn	væ	ehsan	hæva-ye	sæɾd	ro	dust	dar-im
		I	and	Ehsan	weather-EZ	cold	OM	loving	have-1PL
		<i>Ehsan and I like cold weather.</i>							
3	شما و مهشید امتحان دارید.	shoma	væ	mæhshid		emtehan			dar-in
		you	and	Mahshid		exam			have-2PL
		<i>Mahshid and you have an exam.</i>							
4	شما و حسن آب ماهی ها رو عوض می کنید.	shoma	væ	hæsæn	ab-e	mahi-ha	ro	ævæz	mi-kon-in
		you	and	Hasan	water-EZ	fish-pl	OM	changing	IND-do-2PL
		<i>Hasan and you change the water of the fish bowl.</i>							
5	سارا و من از موزه دیدن می کنیم.	sara	væ	mæn	æz	muze	didæn		mi-kon-im
		Sara	and	I	from	museum		visiting	IND-do-1PL
		<i>Sara and I visit the museum.</i>							
6	شهاب و شما درسها رو مروری کنید.	shæhab	væ	shoma	dærs-ha	ro	morur		mi-kon-in
		Shahab	and	you	lesson-pl	OM		reviewing	IND-do-2PL
		<i>Shahab and you review the lessons.</i>							
7	کاوه و من همکلاس هستیم.	kaveh	væ	mæn		hæmkelas			hæst-im
		Kaveh	and	I		classmate			be-1PL
		<i>Kaveh and I are classmates.</i>							
8	نسترن و شما گلها رو آب می دین.	næstæræn	væ	shoma		gol-ha	ro	ab	mi-d-in
		Nastaran	and	you		flower-pl	OM	water	IND-give-2PL
		<i>Nastaran and you water the plants.</i>							

Table A-6. Continued

item	stimuli	gloss							
9	شما و نسرين با هم همكاري مي كنين.	shoma	væ	næsrin	ba	hæm	hæmkari	mi-kon-in	
		you	and	Nasrin	with	each other	cooperating	IND-do-2PL	
		<i>Nasrin and you cooperate with each other.</i>							
10	مليحه و من شيشه ها رو پاك مي كنيم.	mælihe	væ	mæn		shishe-ha	ro	pak	mi-kon-im
		Maliheh	and	I		glass-pl	OM	cleaning	IND-do-1PL
		<i>Maliheh and I clean the glasses.</i>							
11	شما و خواهرتان آشپزي مي كنين.	shoma	væ	xahær-etan		ashpazi		mi-kon-in	
		you	and	sister-your		cooking		IND-do-2PL	
		<i>you and your sister cook.</i>							
12	سيروس و من قسم مي خوريم.	syrus	væ	mæn		qæsæm		mi-xor-im	
		Syrus	and	I		swearing		IND-collide-1PL	
		<i>Syrus and I are going to swear.</i>							
13	شما و ندا نقاشي ها رو رنگ مي كنين.	shoma	væ	neda		næqashi-ha	ro	ræng	mi-kon-in
		you	and	Neda		drawing-pl	OM		IND-do-2PL
		<i>you and Neda paint the drawings.</i>							
14	من و زاله طناب بازي مي كنيم.	mæn	væ	zhale		tænab-bazi		mi-kon-im	
		I	and	Zhaleh		rope-playing		IND-do-1PL	
		<i>Zhaleh and I skip the rope.</i>							
15	شما و مرضيه شاخه هاي اضافي رو قيچي مي كنين	shoma	væ	mærziye	shaxe-ha-ye	ezafi	ro	qeichi	mi-kon-in
		you	and	Marziye	branch-pl-EZ	extra	OM	scissors	IND-do-2PL
		<i>Marziyeh and you cut the extra branches.</i>							
16	شنيدم كه تو و امير نامزد مي كنين.	shenid-æm		ke	to	væ	amir	namzæd	mi-kon-in
		heard-I		that	you	and	Amir	engaging	IND-do-2PL
		<i>I heard that Amir and you engage.</i>							

Table A-6. Continued

item	Stimuli	gloss									
17	من و شیدا با هم آواز می خونیم.	mæn	væ	sheida	ba	hæm	avaz	mi-xun-im			
		I	and	Sheida	with	together	song	IND-sing-1PL			
		<i>Sheida and I sing together.</i>									
18	مهران و شما منطقه رو نقشه برداری می کنین.	mehran	væ	shoma	mæntæqe	ro	næqshe	bærdari	mi-kon-in		
		Mehran	and	you	area	OM	map	drawing	IND-do-2PL		
		<i>Mehran and you draw a map of the area.</i>									
19	من و شهرام سه فصل کتاب رو خلاصه می کنیم.	mæn	væ	shæhram	se	fæsl-e	ketab	ro	xolase	mi-kon-im	
		I	and	Shahram	three	chapter	book	OM	summarizing	IND-do-1PL	
		<i>Shahram and I are going to summarize three chapters of the book.</i>									
20	بهروز و تو برنامه ها رو ردیف می کنین.	behruz	væ	to	bærname-ha	ro	rædif		mi-kon-in		
		Behruz	and	you	program-pl	OM	organizing		IND-do-2PL		
		<i>Behrooz and you organize the programs.</i>									
21	من و شیرین آهوها رو تماشا می کنیم.	mæn	væ	shirin		ahu-ha	ro	tæmasha	mi-kon-im		
		I	and	Shirin		deer-pl	OM	watching	IND-do-1PL		
		<i>shirin and I watch the deer.</i>									
22	حمید گفت که رضا و تو کتابها رو جا جا می کنین.	hæmid	goft	ke	reza	væ	to	ketab-ha	ro	jabeja	mi-kon-in
		Hamid	told	that	Reza	and	you	book-pl	OM	moving	IND-do-2PL
		<i>Hamid told that Reza and you move the books.</i>									
23	شما و سحر تکالیف رو انجام می دین.	shoma	væ	sæhær	tækalif	ro	ænjam		mi-deh-in		
		you	and	Sahar	homework	OM	doing		IND-give-2PL		
		<i>Sahar and you do the homework.</i>									
24	من و بهمن حیاط رو جارو می کنیم.	mæn	væ	bæhmæn		hæyat	ro	jaru	mi-kon-im		
		I	and	Bahman		yard	OM	sweeping	IND-do-1PL		
		<i>Bahman and I sweep the yard.</i>									

Table A-6. Continued

item	Stimuli	gloss						
25	فرشاد و شما دوستان صمیمی من هستین.	færshad	væ	shoma	dustan-e	sæmimi-e	mæn	hæst-in
		Farshad	and	you	friend-EZ	intimate-EZ	I	be-2PL
		<i>Farshad and you are my intimate friends.</i>						
26	من و فربیا سخنرانی رو گوش می کنیم.	mæn	væ	færiba	soxænrani	ro	gush	mi-kon-im
		I	and	Fariba	lecture	OM	ear	IND-do-1PL
		<i>Fariba and I listen to the lecture.</i>						
27	بیژن و من در یک شرکت کار می کنیم.	bizhæn	væ	mæn	dær yek	sherkæt	kar	mi-kon-im
		Bijan	I	I	in one	company	working	IND-do-1PL
		<i>Bijan and I work in the same company.</i>						
28	من و مهین به هم کمک می کنیم.	mæn	væ	mæhin	be	hæm	komæk	mi-kon-im
		I	and	Mahin	to	each other	helping	IND-do-1PL
		<i>Mahin and I help each other.</i>						
29	سعید و من برای گردش برنامه ریزی می کنیم.	sa'id	væ	mæn	bæraye	gærdesh	brnamerizi	mi-kon-im
		Saeed	and	I	for	picnic	planing	IND-do-1PL
		<i>Saeed and I plan for the picnic.</i>						
30	رویا و تو دیوارها رو تزیین می کنین.	roya	væ	to	divar-ha	ro	taz'in	mi-kon-in
		Roya	and	you	wall-pl	OM	decorating	IND-do-2PL
		<i>Roya and you decorate the walls.</i>						
31	تو و احمد در ایستگاه اتوبوس معطل می شین.	to	væ	æhmæd	dær istgah-e	otobus	mo'ætæel	mi-sh-in
		you	and	Ahmad	in stop-EZ	bus	waited	IND-become-3pl
		<i>Ahmad and you wait at the bus stop.</i>						
32	من و مادرم هم عقیده هستیم.	mæn	væ	madær-æm		hæm æqide		hæst-im
		I	and	mother-my		same idea		be-1PL
		<i>my mother and I are (people) of the same ideas.</i>						

Table A-6. Continued

item	stimuli	gloss								
33	من و لادن با هم عطسه می زنیم.	mæn	væ	ladæn	ba-hæm	ætse	mi-zæn-im			
		I	and	Ladan	together	sneezing	IND--hit-1PL			
		<i>Ladan and I sneeze at the same time.</i>								
34	بهنام و تو به بچه ها غذا می دین.	behnam	væ	to	be	bæche-ha	qæza	mi-d-in		
		Behnam	and	you	to	child-pl	food	IND-give-2PL		
		<i>Behnam and you feed the children.</i>								
35	من و شعله در خوابگاه دختران کار می کنیم.	mæn	væ	sho'le	dær	xabgah-e	doxtær-an	kar	mi-kon-im	
		I	and	Sholeh	in	dorm-EZ	girl-pl	working	IND-do-1PL	
		<i>Sholeh and I work in the girls dormitory.</i>								
36	مهرانه گفت که بهنام و شما قبول می شین.	mehrane		goft	ke	behnam	væ	shoma	qæbul	mi-sh-in
		Mehrane		told	that	Behnam	and	you	admitting	IND-become-3PL
		<i>Mehrane told that Behnam and you will be admitted.</i>								
37	فرهاد و من با هم کوهنوردی رو تجربه می کنیم.	færhad	væ	mæn	ba-hæm	kuh	næværdi	ro	tæjrobe	mi-kon-im
		Farhad	and	I	together	mountain	climbing	OM	experiencing	IND-do-1PL
		<i>Farhad and I experience the mountain climbing together.</i>								
38	شکوفه و تو در پروژه کار می کنین.	shokufe	væ	to	dær	porozhe	kar		mi-kon-in	
		Shokufe	and	you	in	project	working		IND-do-2PL	
		<i>Shokufeh and you work in the project.</i>								
39	منوچهر و من همدیگر رو دوست داریم.	mænucwehr	væ	mæn		hæmdigær	ro	dust	dar-im	
		Manucwehr	and	I		each other	OM	loving	have-1PL	
		<i>Manoochehr and I love each other.</i>								
40	شراره و شما در مسابقه شرکت می کنین.	shærare	væ	shoma	dær	mosabeqe	sherkæt		mi-kon-in	
		Sharareh	and	you	in	competition	participating		IND-do-2PL	
		<i>Sharareh and you participate in the competition.</i>								

Table A-6. Continued

item	stimuli	gloss						
41	مهرنوش جایزه می گیره.	mehnush	Jayeze				mi-gir-e	
		mehnush	Prize				IND-take-3SG	
		<i>Mehnush wins the prize.</i>						
42	منیزه از موفقیت‌هایش تعریف می کنه.	mænizhe	æz	movæfæqiyæt-ha-yæsh	tærif		mi-kon-e	
		Manizhe	from	success-pl-her	explaining		IND-do-3SG	
		<i>Manizhe talks of her successes.</i>						
43	پروین سه تا از شعر ها رو حفظ می کنه.	pærvī	se-ta	æz	she'r-ha	ro	hefz	mi-kon-e
		Parvin	three	from	poem-pl	OM	memorizing	IND-do-3SG
		<i>Parvin memorizes three of the poems.</i>						
44	مینا با بهرام درس می خونه.	mina	ba	bæhram	dærs		mi-xun-e	
		Mina	with	Bahram	lesson		IND-sing-3SG	
		<i>Mina studies with Bahram.</i>						
45	خسرو سرما می خوره.	xosro	Særma				mi-xor-e	
		Khosro	Cold				IND-collide-3SG	
		<i>Bahman gets a cold.</i>						
46	حسن تاریخ ایران رو مطالعه می کنه.	hæsæn	tarix-e	iran	ro	motale'eh	mi-kon-e	
		Hasan	history-EZ	Iran	OM	studying	IND-do-3SG	
		<i>Hasan studies the history of Iran.</i>						
47	سیاوش برای شرکت کنندگان تار می زنه.	siyavæsh	Bæraye			sherkæt-konænde-gan	tar	mi-zæn-e
		Siyæsh	for			participant-pl	Tar	IND-hit-3SG
		<i>Siyavash plays Tar music for the participants.</i>						
48	خسرو نسترن رو صدا می کنه.	xosro	næstæræn	ro	seda		mi-kon-e	
		Khosro	Nastaran	OM	calling		IND-do-3SG	
		<i>Khosro calls Nastaran.</i>						

Table A-6. Continued

item	stimuli	gloss					
49	شاهین فعالیت خوبی رو تجربه می کنه.	shahin Shahin	fæ'aliyæt-e activity-EZ	xub-i good-one	ro OM	tæjrobe experiencing	mi-kon-e IND-do-3SG
		<i>Shahin experiences a good activity.</i>					
50	مینو برای مسافرت آماده می شه.	minu bəraye Minu for	mosaferæt Trip		amade preparing	mi-sh-e IND-become-3SG	
		<i>Minu prepares for the trip.</i>					
51	مرغابی بزرگی در آن طرف دریاچه لانه داره.	morqabi-ye duck-EZ	bozorg-l big-one	dær an at that	tæræf-e side-EZ	daryache lane lake nest	dar-e have-3SG
		<i>A big duck has nest at the other side of the lake.</i>					
52	پرستو ماهی پلو تهیه می کنه.	pæræstu Parastu	mahi-polo fish-rice	tæhiye preparing		mi-kon-e IND-do-3SG	
		<i>Parastu cooks rice and fish.</i>					
53	حسابدار شرکت درخواست بازنشستگی می کنه.	hesabdar-e accountant-EZ	sherkæt company	dærxast-e applying-EZ	bazneshæstegi retirement	mi-kon-e IND-do-3SG	
		<i>the accountant of the company applies for retirement.</i>					
54	پرندۀ به جوجه هایش غذا میده.	pærænde bird	be to	juje-ha-yæsh chick-pl-her	qæza food	mi-de-e IND-give-3SG	
		<i>the bird feeds her chicks.</i>					
55	کوروش سه بخش از نوشته ها رو ترجمه می کنه.	kurosh se Kurosh three	bæxsh chapter	æz of	neveshte-ha text-pl	ro tærjome OM translating	mi-kon-e IND-do-3SG
		<i>Kurosh translates three chapters of the texts.</i>					
56	پدر اکرم مریضه.	pedær-e father-EZ	ækræm Akram	mæriz sick		e be.3SG	
		<i>Akram's father is sick.</i>					

Table A-6. Continued

item	stimuli	gloss					
57	مهشید نگران نمره هاشه.	mæhshid Mahshid <i>Mahshid worries for her grades.</i>	negæran-e worried-EZ	nomre-ha-sh grade-pl-her	e be.3SG		
58	صدیقه کاغذها رو رنگ می کنه.	sediqe Sediqe <i>Sedighe paints the papers.</i>	kaqæz-ha paper-pl	ro OM	ræng painting	mi-kon-e IND-do-3SG	
59	شینم در مسابقه شرکت می کنه.	shæbnæm Shabnam <i>Shabnam participates in the competition.</i>	dær in	mosabeqe competition	sherkæt participating	mi-kon-e IND-do-3SG	
60	علی جغرافیا رو دوست داره.	æli joqrafiya Ali geography <i>Ali loves geography.</i>	ro OM	dust loving	dar-e have-3SG		
61	حدیث با علی موافقه.	hædis ba Hadis with <i>Hadis agrees with Ali.</i>	æli Ali	movafeq agreeing	e be.3SG		
62	امید به اصفهان سفر می کنه.	omid be Omid to <i>Omid travels to Isfahan.</i>	esfæhan Esfahan	sæfær travelling	mi-kon-e IND-do-3SG		
63	منیزه از همکلاسی اش کمک می گیره.	mænizhe æz Manizhe from <i>Manizheh asks help from her classmate.</i>	hæmkelasi-yæsh classmate-her	komæk help	mi-gir-e IND-take-3SG		
64	پرستار دارو رو به مریض میده.	pæræstar nurse <i>the nurse gives the medicines to the patient.</i>	daru medicine	ro OM	be to	mæriz patient	mi-de-e IND-give-3SG

Table A-6. Continued

item	stimuli	gloss					
65	جمشید دو نامه برای گزنوش پُست می کنه.	jæmshid do name bæraye golnush post mi-kon-e					
		Jamshid two letter for Golnush mailing IND-do-3SG					
		<i>Jamshid mails two letters to Goli.</i>					
66	نرگس از نمره هایش راضی یه.	nærages æz nomre-ha-yæsh razi ye					
		Narges from grade-PL-her satisfied be.3SG					
		<i>Narges is satisfied with her grades.</i>					
67	افسانه برای مادرش یک کیف انتخاب می کنه.	æfsane bæraye madær-æsh yek kif entexab mi-kon-e					
		Afsane for mother-her one bag choosing IND-do-3SG					
		<i>Afsaneh chooses a bag for her mother.</i>					
68	هدیه گفت که افشین خیلی تلاش می کنه.	hedye goft ke æfshin xeili tælash mi-kon-e					
		Hedye told that Afshin a lot effort IND-do-3SG					
		<i>Hedye told that Afshin is working hard.</i>					
69	فریدون کار دیگری پیدا می کنه.	fereidun kar-e digæri peida mi-kon-e					
		Fereidun job-EZ another finding IND-do-3SG					
		<i>Fereidun finds another job.</i>					
70	همایون گفت که اضافه کاری ها رو پرداخت می کنن.	homayun goft ke ezafe-kari-ha ro pærdaxt mi-kon-æn					
		Homayun told that overtime-pl OM paying IND-do-3PL					
		<i>Homayoon told that they are going to pay overtimes.</i>					
71	مهران هدفش رو توضیح می ده.	mehran hædæf-esh ro tozih mi-de-e					
		Mehran goal-his OM explaining IND-give-3SG					
		<i>Mehran explains his goal.</i>					
72	مهتاب ساعتش رو پیدا می کنه.	mæhtab sa'æt-esh ro peida mi-kon-e					
		Mahtab watch-his OM finding IND-do-3SG					
		<i>Mahtab finds her watch.</i>					

Table A-6. Continued

item	stimuli	gloss					
73	شهرام ازدواج می کنه.	shæhram Shahram	Ezdevaj Marrying			mi-kon-e IND-do-3SG	
		<i>Shahram is going to marry.</i>					
74	ماهی کوچک در رودخانه شنا می کنه.	mahi-e fish-EZ	kuchæk little	dær in	rudxane river	shena swimming	mi-kon-e IND-do-3SG
		<i>the little fish is swimming in the river.</i>					
75	پروانه در جشنواره جایزه می گیره.	pærvane Parvaneh	dær in	jæshnvare festival	jayeze prize	mi-gir-e IND-take-3SG	
		<i>Parvaneh is going to receive a prize in the festival.</i>					
76	سیروس از مستاجرش شکایت می کنه.	syrus Cyrus	æz from	mostæjer-æsh lessee-his	shekayæt complaining	mi-kon-e IND-do-3SG	
		<i>Cyrus complains of his lessee.</i>					
77	فرزانه کتاب رمان رو نقد می کنه.	færzane Farzaneh	ketab-e book-EZ	roman novel	ro næqd OM criticizing	mi-kon-e IND-do-3SG	
		<i>Farzaneh reviews the novel.</i>					
78	سوسن ملافه ها رو اطو می کنه.	susan Susan	mælafe-ha sheet-pl	ro OM	otu ironing	mi-kon-e IND-do-3SG	
		<i>Susan irons the bed sheets.</i>					
79	پریسا با مهرداد بحث می کنه.	pærisa Parisa	ba with	mehrdad Mehrdad	bæhs discussing	mi-kon-e IND-do-3SG	
		<i>Parisa discusses with Mehrdad.</i>					
80	مریم با مهري تلفنی صحبت می کنه.	mæryæm Maryam	ba with	ba mehri with Mehri	telefon-i telephone-on	sohbæt talking	mi-kon-e IND-do-3SG
		<i>Maryam talks with Mehri on phone.</i>					

APPENDIX B
GLOSS- VERB TYPE VERB TENSE EXPERIMENT

Table B-1. List of the target stimuli for Verb Type Verb Tense experiment

No.	VT	preamble	gloss	possible target response			
1	A	طناب ها گره	tænab-ha gere ... rope-pl knot ... the ropes knot ... <i>the ropes became knotted.</i>	mi-xor-e IND-collide-3SG	mi-xor-æn IND-collide-3PL	xord collide.Past.3SG	xord-æn collide.Past-3PL
2	A	زنجیر ها پیچ	zænjir-ha pich ... chain-pl twist ... the chains twist ... <i>the chains became twisted.</i>	mi-xor-e IND-collide-3SG	mi-xor-æn IND-collide-3PL	xord collide.Past.3SG	xord-æn collide.Past-3PL
3	A	درها رنگ	dær-ha ræng ... door-pl paint ... the doors paint ... <i>the doors became painted.</i>	mi-xor-e IND-collide-3SG	mi-xor-æn IND-collide-3PL	xord collide.Past.3SG	xord-æn collide.Past-3PL
4	A	فرش ها خاک	færsh-ha xak ... rug-pl dust ... the rugs dust ... <i>the rugs became dusty.</i>	mi-xor-e IND-collide-3SG	mi-xor-æn IND-collide-3PL	xord collide.Past.3SG	xord-æn collide.Past-3PL
5	A	کتابخونه ها رونق	ketab xune-ha ronæq ... library-pl flourishing ... the libraries flourishing ... <i>the libraries flourished.</i>	mi-gir-e IND-take-3SG	mi-gir-æn IND-take-3PL	gereft take.Past.3SG	gereft-æn take.Past-3PL
6	A	دفتر ها باقی	dæftær-ha baqi ... notebook-pl left ... the notebooks remaining ... <i>the notebooks remained.</i>	mi-mun-e IND-remain-3SG	mi-mun-æn IND-remain-3PL	mund remain.Past.3SG	mund-æn remain.Past-3PL

Table B-1. Continued

No.	VT	preamble	gloss		possible target response			
7	A	سقفها فرو	sæqf-ha roof-pl the roofs down ... <i>the roofs collapsed.</i>	foru ... down ...	mi-riz-e IND-collapse-3SG	mi-riz-æn IND-collapse-3PL	rixt collapse.Past.3SG	rixt-æn collapse.Past-3PL
8	A	گردوها غل	gerdu-ha walnut-pl the walnuts spining ... <i>the walnuts spun.</i>	qel ... spining ...	mi-xor-e IND-collide-3SG	mi-xor-æn IND-collide-3PL	xord collide.Past.3SG	xord-æn collide.Past-3PL
9	A	بسته ها برگشت	bæste-ha package-pl the packages returning ... <i>the packages returned.</i>	bærgæsht ... returning ...	mi-xor-e IND-collide-3SG	mi-xor-æn IND-collide-3PL	xord collide.Past.3SG	xord-æn collide.Past-3PL
10	A	کفش ها سر	kæfsh-ha shoe-pl the shoes sliding ... <i>the shoes slided.</i>	sor ... sliding ...	mi-xor-e IND-collide-3SG	mi-xor-æn IND-collide-3PL	xord collide.Past.3SG	xord-æn collide.Past-3PL
11	A	میوه ها هدر	mive-ha fruit-pl the fruits wasting ... <i>the fruits were wasted.</i>	hædær ... wasting ...	mi-r-e IND-go-3SG	mi-r-æn IND-go-3PL	ræft go.Past.3SG	ræft-æn go.Past-3PL
12	A	برگ ها تکان	bærg-ha leaf-pl the leaves swaying ... <i>the leaves swayed.</i>	tekan ... swaying ...	mi-xor-e IND-collide-3SG	mi-xor-æn IND-collide-3PL	xord collide.Past.3SG	xord-æn collide.Past-3PL

Table B-1. Continued

No.	VT	preamble	gloss		possible target response			
13	A	سنگ ها فرو	sæng-ha stone-pl the stones <i>the stones sunk.</i>	foru ... sinking ...	mi-r-e IND-go-3SG	mi-r-æn IND-go-3PL	ræft go.Past.3SG	ræft-æn go.Past-3PL
14	A	تخته ها شناور	taxte-ha board-pl the boards <i>the boards were floating.</i>	shenavær ... floating ...	mi-mun-e IND-remain-3SG	mi-mun-æn IND-remain-3PL	mund remain.Past.3SG	mund-æn remain.Past-3PL
15	B	لوبياها جوانه	lubia-ha bean-pl the beans <i>the beans sprouted.</i>	jævane ... sprout ...	mi-zæn-e IND-strike-3SG	mi-zæn-æn IND-strike-3PL	zæd strike.Past.3SG	zæd-æn strike.Past-3PL
16	B	میخها گل	mixæk-ha carnation the carnations <i>the carnations flowered.</i>	gol ... flower ...	mi-kon-e IND-DO-3SG	mi-kon-æn IND-DO-3PL	kærd do.Past.3SG	kærd-æn do.Past-3PL
17	B	ساقه ها برگ	saqe-ha stem-pl the stems <i>the stems budded.</i>	bærg ... leaf ...	mi-d-e IND-give-3SG	mi-d-æn IND-give-3PL	dad give.Past.3SG	dad-æn give.Past-3PL
18	B	دونه ها رشد	dune-ha seed-pl the seeds <i>the seeds grew.</i>	roshd ... growing ...	mi-kon-e IND-DO-3SG	mi-kon-æn IND-DO-3PL	kærd do.Past.3SG	kærd-æn do.Past-3PL

Table B-1. Continued

No.	VT	preamble	gloss		possible target response			
19	B	طوفان ها فرو	tufan-ha storm-pl the storms subsiding ... <i>the storms subsided.</i>	foru ... subsiding ...	mi-shin-e IND-sit-3SG	mi-shin-æn IND-sit-3PL	neshæst sit.Past.3SG	neshæst-æn sit.Past-3PL
20	B	خمير ها وړ	xæmir-ha dough-pl the dough raising <i>the dough raised.</i>	vær ... raising ...	mi-a-d IND-come-3SG	mi-a-n IND-come-3PL	amæd come.Past.3SG	amæd-æn come.Past-3PL
21	B	دست ها ورم	dæst-ha hand-pl the hands swelling ... <i>the hands swelled.</i>	væræm ... swelling ...	mi-kon-e IND-DO-3SG	mi-kon-æn IND-DO-3PL	kærd do.Past.3SG	kærd-æn do.Past-3PL
22	B	زخم ها جوش	zæxm-ha sore-pl the sores scabbing over ... <i>the sores scabbed over.</i>	jush ... scabbing over ...	mi-xor-e IND-collide-3SG	mi-xor-æn IND-collide-3PL	xord collide.Past.3SG	xord-æn collide.Past-3PL
23	B	پاها تاول	pa-ha foot-pl the feet blistering ... <i>the feet blistered.</i>	tavæl ... blistering ...	mi-zæn-e IND-strike-3SG	mi-zæn-æn IND-strike-3PL	zæd strike.Past.3SG	zæd-æn strike.Past-3PL

Table B-1. Continued

No.	VT	preamble	gloss	possible target response			
24	B	آهن ها زنگ	ahæn-ha zæng ... iron-pl rust ... the irons rusting ... <i>the irons rusted.</i>	mi-zæn-e IND-strike-3SG	mi-zæn-æn IND-strike-3PL	zæd strike.Past.3SG	zæd-æn strike.Past-3PL
25	B	شاخه ها شکوفه	shaxe-ha shokufe ... branch-pl blossom ... the branches blossoming ... <i>the branches blossomed.</i>	mi-kon-e IND-DO-3SG	mi-kon-æn IND-DO-3PL	kærd do.Past.3SG	kærd-æn do.Past-3PL
26	B	جوانه ها غنچه	jævane-ha qonche ... twig-pl bud ... the twigs budding ... <i>the twigs budded.</i>	mi-kon-e IND-DO-3SG	mi-kon-æn IND-DO-3PL	kærd do.Past.3SG	kærd-æn do.Past-3PL
27	B	خيارها کپک	xiyar-ha kæpæk ... cucumber-pl mold ... the cucumbers molding ... <i>the cucumbers molded.</i>	mi-zæn-e IND-strike-3SG	mi-zæn-æn IND-strike-3PL	zæd strike.Past.3SG	zæd-æn strike.Past-3PL
28	B	گندمها ریشه	gændom-ha rishe ... wheat-pl root ... the wheat taking root ... <i>the wheat took root.</i>	mi-kon-e IND-DO-3SG	mi-kon-æn IND-DO-3PL	kærd do.Past.3SG	kærd-æn do.Past-3PL
29	C	لامپها نور	lamp-ha nur ... lamp-pl light ... the lamps lighting ... <i>the lamps gave light.</i>	mi-d-e IND-give-3SG	mi-d-æn IND-give-3PL	dad give.Past.3SG	dad-æn give.Past-3PL

Table B-1. Continued

No.	VT	preamble	gloss	possible target response			
30	C	روزنامه ها خش خش ...	ruzname-ha xesh xesh ... newspaper-pl rustling ... the newspapers rustling ... <i>the newspapers rustled.</i>	mi-kon-e IND-DO-3SG	mi-kon-æn IND-DO-3PL	kærd do.Past.3SG	kærd-æn do.Past-3PL
31	C	آش ها قل	ash-ha qol ... porridge-pl bubble ... the porridge bubbling ... <i>the porridge bubbled.</i>	mi-zæn-e IND-strike-3SG	mi-zæn-æn IND-strike-3PL	zæd strike.Past.3SG	zæd-æn strike.Past-3PL
32	C	آتشفشانها فوران	atæshfeshan-ha fæværan ... volcano-pl gush ... the volcanoes gushing ... <i>the volcanoes gushed.</i>	mi-kon-e IND-DO-3SG	mi-kon-æn IND-DO-3PL	kærd do.Past.3SG	kærd-æn do.Past-3PL
33	C	بشکه ها نشت	boshke-ha næsht ... barrel-pl ooze ... the barrels oozing ... <i>the barrels oozed.</i>	mi-kon-e IND-DO-3SG	mi-kon-æn IND-DO-3PL	kærd do.Past.3SG	kærd-æn do.Past-3PL
34	C	سکه ها جرینگ جرینگ	seke-ha jering jering ... coin-pl jingle ... the coins jingling ... <i>the coins jingled.</i>	mi-kon-e IND-DO-3SG	mi-kon-æn IND-DO-3PL	kærd do.Past.3SG	kærd-æn do.Past-3PL
35	C	بادهای زوزه	bad-ha zuze ... wind-pl moan ... the winds moaning ... <i>the winds moaned.</i>	mi-kesh-e IND-pull-3SG	mi-kesh-æn IND-pull-3PL	keshid pull.Past.3SG	keshid-æn pull.Past-3PL

Table B-1. Continued

No.	VT	preamble	gloss		possible target response			
36	C	چراغها سو سو چراغها سو سو چراغها سو سو چراغها سو سو	cheraq-ha light-pl the lights flickering ... <i>the lights flickered.</i>	su su ... flicker ...	mi-zæn-e IND-strike-3SG	mi-zæn-æn IND-strike-3PL	zæd strike.Past.3SG	zæd-æn strike.Past-3PL
37	C	مته ها وزوز مته ها وزوز مته ها وزوز مته ها وزوز	mæte-ha drill-pl the drills buzzing ... <i>the drills buzzed.</i>	vez vez ... buzz ...	mi-kon-e IND-DO-3SG	mi-kon-æn IND-DO-3PL	kærd do.Past.3SG	kærd-æn do.Past-3PL
38	C	لیوان ها بیره لیوان ها بیره لیوان ها بیره لیوان ها بیره	livan-ha glass-pl the glasses gleaming ... <i>the glasses gleamed.</i>	bærq ... gleaming ...	mi-zæn-e IND-strike-3SG	mi-zæn-æn IND-strike-3PL	zæd strike.Past.3SG	zæd-æn strike.Past-3PL
39	C	سیم ها جرقه سیم ها جرقه سیم ها جرقه سیم ها جرقه	sim-ha cord-pl the electrical cords sparking ... <i>the electrical cords sparked.</i>	jæræqe ... spark ...	mi-zæn-e IND-strike-3SG	mi-zæn-æn IND-strike-3PL	zæd strike.Past.3SG	zæd-æn strike.Past-3PL
40	C	اره ها سرو صدا اره ها سرو صدا اره ها سرو صدا اره ها سرو صدا	ærre-ha saw-pl the saws making noise ... <i>the saws made noise.</i>	sær o seda ... noise ...	mi-kon-e IND-DO-3SG	mi-kon-æn IND-DO-3PL	kærd do.Past.3SG	kærd-æn do.Past-3PL
41	C	پنجره ها تق تق پنجره ها تق تق پنجره ها تق تق پنجره ها تق تق	pænjære-ha window-pl the windows rattling ... <i>the windows rattled.</i>	tæq tæq ... rattling ...	mi-kon-e IND-DO-3SG	mi-kon-æn IND-DO-3PL	kærd do.Past.3SG	kærd-æn do.Past-3PL

Table B-1. Continued

No.	VT	preamble	gloss	possible target response			
42	C	دوربین ها فلاش	durbin-ha felash ... camera-pl flashing ... the cameras flashing ... <i>the cameras flashed.</i>	mi-zæn-e IND-strike-3SG	mi-zæn-æn IND-strike-3PL	zæd strike.Past.3SG	zæd-æn strike.Past-3PL
43	D	فرستنده ها مخابره	ferestænde-ha moxabere ... beacon-pl transmitting ... the beacons transmitting ... <i>the beacons transmitted.</i>	mi-kon-e IND-DO-3SG	mi-kon-æn IND-DO-3PL	kærd do.Past.3SG	kærd-æn do.Past-3PL
44	D	دوربین ها عکس	durbin-ha æks ... camera-pl photo ... the cameras photographing ... <i>the cameras photographed.</i>	mi-gir-e IND-take-3SG	mi-gir-æn IND-take-3PL	gereft take.Past.3SG	gereft-æn take.Past-3PL
45	D	هلیکوپترها چرخ	helikopter-ha chærx ... helicopter-pl rotating ... the helicopters rotating ... <i>the helicopters rotated.</i>	mi-zæn-e IND-strike-3SG	mi-zæn-æn IND-strike-3PL	zæd strike.Past.3SG	zæd-æn strike.Past-3PL
46	D	قایق ها فرار	qayeq-ha færar ... boat-pl escaping ... the boats escaping ... <i>the boats escaped.</i>	mi-kon-e IND-DO-3SG	mi-kon-æn IND-DO-3PL	kærd do.Past.3SG	kærd-æn do.Past-3PL
47	D	رادیو ها اطلاع	radiyo-ha ettela ... radio-pl information ... the radios informing ... <i>the radios informed.</i>	mi-d-e IND-give-3SG	mi-d-æn IND-give-3PL	dad give.Past.3SG	dad-æn give.Past-3PL

Table B-1. Continued

No.	VT	preamble	gloss	possible target response			
48	D	آسانسورها بالا	asansor-ha bala ... elevator-pl up ... the elevators going up ... <i>the elevators went up.</i>	mi-r-e IND-go-3SG	mi-r-æn IND-go-3PL	ræft go.Past.3SG	ræft-æn go.Past-3PL
49	D	تاکسی ها دور	taksi-ha dour ... taxi-pl around ... the taxies turning around ... <i>the taxies turned around.</i>	mi-zæn-e IND-strike-3SG	mi-zæn-æn IND-strike-3PL	zæd strike.Past.3SG	zæd-æn strike.Past-3PL
50	D	مته ها سوراخ	mæte-ha surax ... drill-pl hole ... the drills making ... a hole <i>the drills made a hole.</i>	mi-kon-e IND-DO-3SG	mi-kon-æn IND-DO-3PL	kærd do.Past.3SG	kærd-æn do.Past-3PL
51	D	وانت بارها قاچاق	vanet bar-ha qachaq ... truck-pl smuggling ... the trucks smuggling ... <i>the trucks smuggled.</i>	mi-kon-e IND-DO-3SG	mi-kon-æn IND-DO-3PL	kærd do.Past.3SG	kærd-æn do.Past-3PL
52	D	تانک ها حمله	tank-ha hæmle ... tank-pl attack ... the tanks attacking ... <i>the tanks attacked.</i>	mi-kon-e IND-DO-3SG	mi-kon-æn IND-DO-3PL	kærd do.Past.3SG	kærd-æn do.Past-3PL
53	D	پنکه ها خنک	pænke-ha xonæk ... fan-pl cool ... the fans cooling ... <i>the fans cooled.</i>	mi-kon-e IND-DO-3SG	mi-kon-æn IND-DO-3PL	kærd do.Past.3SG	kærd-æn do.Past-3PL

Table B-1. Continued

No.	VT	preamble	gloss	possible target response			
54	D	هوایماها پرواز	hæva peima-ha pærvaz ... airplane-pl flight ... the airplanes flying ... <i>the airplanes flew.</i>	mi-kon-e IND-DO-3SG	mi-kon-æn IND-DO-3PL	kærd do.Past.3SG	kærd-æn do.Past-3PL
55	D	بلندگوها اعلام	bolændgoo-ha elam ... loudspeaker-pl announcing ... the loudspeakers announcing ... <i>the loudspeakers announced.</i>	mi-kon-e IND-DO-3SG	mi-kon-æn IND-DO-3PL	kærd do.Past.3SG	kærd-æn do.Past-3PL
56	D	رادارها شناسایی	radar-ha shenasa'i ... radar-pl identifying ... the radars identifying ... <i>the radars identified.</i>	mi-kon-e IND-DO-3SG	mi-kon-æn IND-DO-3PL	kærd do.Past.3SG	kærd-æn do.Past-3PL
57	E	باقلاواها چشمک	baqlava-ha cheshmæk ... baklava-pl winking ... the baklavas winking ... <i>the baklavas winked.</i>	mi-zæn-e IND-strike-3SG	mi-zæn-æn IND-strike-3PL	zæd strike.Past.3SG	zæd-æn strike.Past-3PL
58	E	قابلمه ها تقلب	qablame-ha tæqælob ... pot-pl cheating ... the pots cheating ... <i>the pots cheated.</i>	mi-kon-e IND-DO-3SG	mi-kon-æn IND-DO-3PL	kærd do.Past.3SG	kærd-æn do.Past-3PL
59	E	مدادها اخم	medad-ha æxm ... pencil-pl frowning ... the pencils frowning ... <i>the pencils frowned.</i>	mi-kon-e IND-DO-3SG	mi-kon-æn IND-DO-3PL	kærd do.Past.3SG	kærd-æn do.Past-3PL

Table B-1. Continued

No.	VT	preamble	gloss		possible target response			
60	E	جاروهاراه	jaru-ha broom-pl the brooms way ... <i>the brooms walked.</i>	rah ... way ...	mi-r-e IND-go-3SG	mi-r-æn IND-go-3PL	ræft go.Past.3SG	ræft-æn go.Past-3PL
61	E	دیوارها سوت	divar-ha wall-pl the walls whistling ... <i>the walls whistled.</i>	sut ... whistling ...	mi-zæn-e IND-strike-3SG	mi-zæn-æn IND-strike-3PL	zæd strike.Past.3SG	zæd-æn strike.Past-3PL
62	E	روسری هالبخند	rusæri-ha scarf-pl the scarves smiling ... <i>the scarves smiled.</i>	læbxænd ... smiling ...	mi-zæn-e IND-strike-3SG	mi-zæn-æn IND-strike-3PL	zæd strike.Past.3SG	zæd-æn strike.Past-3PL
63	E	عطرها گریه	ætr-ha perfume-pl the perfumes crying ... <i>the perfumes cried.</i>	gerye ... crying ...	mi-kon-e IND-DO-3SG	mi-kon-æn IND-DO-3PL	kærd do.Past.3SG	kærd-æn do.Past-3PL
64	E	لوله ها ورزش	lule-ha pipe-pl the pipes exercising ... <i>the pipes exercised.</i>	værzesh ... exercising ...	mi-kon-e IND-DO-3SG	mi-kon-æn IND-DO-3PL	kærd do.Past.3SG	kærd-æn do.Past-3PL
65	E	خودکارها زانو	xodkar-ha pen-pl the pens kneeling ... <i>the pens kneeled.</i>	zanu ... kneeling ...	mi-zæn-e IND-strike-3SG	mi-zæn-æn IND-strike-3PL	zæd strike.Past.3SG	zæd-æn strike.Past-3PL

Table B-1. Continued

No.	VT	preamble	gloss	possible target response			
66	E	بلندگوها موافقت	bolændgu-ha movafeqæt ... loudspeaker-pl agreeing ... the loudspeakers agreeing ... <i>the loudspeakers agreed.</i>	mi-kon-e IND-DO-3SG	mi-kon-æn IND-DO-3PL	kærd do.Past.3SG	kærd-æn do.Past-3PL
67	E	گوجه ها فکر	goje-ha fekr ... tomato-pl thinking ... the tomato's thinking ... <i>the tomato's thought.</i>	mi-kon-e IND-DO-3SG	mi-kon-æn IND-DO-3PL	kærd do.Past.3SG	kærd-æn do.Past-3PL
68	E	نخودها دعوا	noxod-ha da'va ... pea-pl quarreling ... the peas quarreling ... <i>the peas quarreled.</i>	mi-kon-e IND-DO-3SG	mi-kon-æn IND-DO-3PL	kærd do.Past.3SG	kærd-æn do.Past-3PL
69	E	کامپیوترها تعظیم	kamputer-ha ta'zim ... computer-pl bowing ... the computers bowing ... <i>the computers bowed.</i>	mi-kon-e IND-DO-3SG	mi-kon-æn IND-DO-3PL	kærd do.Past.3SG	kærd-æn do.Past-3PL
70	E	پنجره ها نرمش	pænjære-ha nærmesh ... window-pl exercising ... the windows exercising ... <i>the windows exercised.</i>	mi-kon-e IND-DO-3SG	mi-kon-æn IND-DO-3PL	kærd do.Past.3SG	kærd-æn do.Past-3PL
71	F	گلابیها خورده	golabi-ha xorde ... pear-pl eaten ... the pears ... eaten <i>the pears were eaten.</i>	mi-sh-e IND-become-3SG	mi-sh-æn IND-become-3PL	shod become.Past.3SG	shod-æn become.Past-3PL

Table B-1. Continued

No.	VT	preamble	gloss		possible target response			
72	F	جوراب ها پوشیده	jurab-ha sock-pl the socks ... worn <i>the socks were worn.</i>	pushide ... worn ...	mi-sh-e IND-become-3SG	mi-sh-æn IND-become-3PL	shod become.Past.3SG	shod-æn become.Past-3PL
73	F	داستان ها خوانده	dastan-ha story-pl the stories ... read <i>the stories were read.</i>	xunde ... read ...	mi-sh-e IND-become-3SG	mi-sh-æn IND-become-3PL	shod become.Past.3SG	shod-æn become.Past-3PL
74	F	دستمال ها خریده	dæstmal-ha handkerchief-pl the handkerchiefs ... bought <i>the handkerchiefs were bought.</i>	xæride ... bought ...	mi-sh-e IND-become-3SG	mi-sh-æn IND-become-3PL	shod become.Past.3SG	shod-æn become.Past-3PL
75	F	دامن ها دوخته	damæn-ha skirt-pl the skirts ... sewn <i>the skirts were sewn.</i>	duxte ... sewn ...	mi-sh-e IND-become-3SG	mi-sh-æn IND-become-3PL	shod become.Past.3SG	shod-æn become.Past-3PL
76	F	تپه ها دیده	tæpe-ha hill-pl the hills ... seen <i>the hills were seen.</i>	dide ... seen ...	mi-sh-e IND-become-3SG	mi-sh-æn IND-become-3PL	shod become.Past.3SG	shod-æn become.Past-3PL
77	F	بشقابها شسته	boshqab-ha plate-pl the plates ... washed <i>the plates were washed.</i>	shoste ... washed ...	mi-sh-e IND-become-3SG	mi-sh-æn IND-become-3PL	shod become.Past.3SG	shod-æn become.Past-3PL

Table B-1. Continued

No.	VT	preamble	gloss	possible target response			
78	F	قندان ها شکسته	qændan-ha shekæste ... sugar bowl-pl broken ... the sugar bowls ... broken <i>the sugar bowls were broken.</i>	mi-sh-e IND-become-3SG	mi-sh-æn IND-become-3PL	shod become.Past.3SG	shod-æn become.Past-3PL
79	F	چمدان ها فروخته	chæmedan-ha foruxte ... suitcase-pl sold ... the suitcases ... sold <i>the suitcases were sold.</i>	mi-sh-e IND-become-3SG	mi-sh-æn IND-become-3PL	shod become.Past.3SG	shod-æn become.Past-3PL
80	F	توت فرنگی ها چیده	tut færængi-ha chide ... strawberry-pl picked ... the strawberries ... picked <i>the strawberries were picked.</i>	mi-sh-e IND-become-3SG	mi-sh-æn IND-become-3PL	shod become.Past.3SG	shod-æn become.Past-3PL
81	F	ژاکت ها بافته	zhaket-ha bafte ... sweater-pl knitted ... the sweaters ... knitted <i>the sweaters were knitted.</i>	mi-sh-e IND-become-3SG	mi-sh-æn IND-become-3PL	shod become.Past.3SG	shod-æn become.Past-3PL
82	F	عینک ها شمرده	einæk-ha shomorde ... eye-glass-pl counted ... the eye-glasses ... counted <i>the eye-glasses were counted.</i>	mi-sh-e IND-become-3SG	mi-sh-æn IND-become-3PL	shod become.Past.3SG	shod-æn become.Past-3PL
83	F	انگشتر ها فرستاده	ængoshtær-ha ferestade ... ring-pl sent ... the rings ... sent <i>the rings were sent.</i>	mi-sh-e IND-become-3SG	mi-sh-æn IND-become-3PL	shod become.Past.3SG	shod-æn become.Past-3PL

Table B-1. Continued

No.	VT	preamble	gloss	possible target response			
84	F	هویج ها پخته	hævij-ha poxte ... carrot-pl cooked ... the carrots ... cooked <i>the carrots were cooked.</i>	mi-sh-e IND-become-3SG	mi-sh-æn IND-become-3PL	shod become.Past.3SG	shod-æn become.Past-3PL
85	G	میزها چوبی	miz-ha chubi ... table-pl wooden ... the tables ... wooden <i>the tables were wooden.</i>	ye be-PRES-3SG	æn be-PRES-3PL	bud be.Past.3SG	bud-æn be.Past-3PL
86	G	مدادها قرمز	medad-ha qermez ... pencil-pl red ... the pencils ... red <i>the pencils were red.</i>	e be-PRES-3SG	æn be-PRES-3PL	bud be.Past.3SG	bud-æn be.Past-3PL
87	G	سیبها سفت	sib-ha seft ... apple-pl crisp ... the apples ... crisp <i>the apples were crisp.</i>	e be-PRES-3SG	æn be-PRES-3PL	bud be.Past.3SG	bud-æn be.Past-3PL
88	G	گوجهها تازه	goje-ha taze ... tomato-pl fresh ... the tomato's ... fresh <i>the tomato's were fresh.</i>	æs be-PRES-3SG	æn be-PRES-3PL	bud be.Past.3SG	bud-æn be.Past-3PL
89	G	خانهها دور	xane-ha dur ... house-pl far ... the houses ... far <i>the houses were far.</i>	e be-PRES-3SG	æn be-PRES-3PL	bud be.Past.3SG	bud-æn be.Past-3PL

Table B-1. Continued

No.	VT	preamble	gloss		possible target response			
90	G	زده ها فلزی	nærde-ha fence-pl the fences ... metallic <i>the fences were metallic.</i>	felezi ... metallic ...	ye be-PRES-3SG	æn be-PRES-3PL	bud be.Past.3SG	bud-æn be.Past-3PL
91	G	پله ها سنگی	pele-ha stair-pl the stairs ... made of stone <i>the stairs were made of stone.</i>	sængi ... made of stone ...	ye be-PRES-3SG	æn be-PRES-3PL	bud be.Past.3SG	bud-æn be.Past-3PL
92	G	صندلی ها چرمی	sændæli-ha chair-pl the chairs ... Leather <i>the chairs were leather.</i>	chærmi ... leather ...	ye be-PRES-3SG	æn be-PRES-3PL	bud be.Past.3SG	bud-æn be.Past-3PL
93	G	قیرها سیاه	qir-ha tar-pl the tar ... black <i>the tar was black.</i>	siyah ... black ...	e be-PRES-3SG	æn be-PRES-3PL	bud be.Past.3SG	bud-æn be.Past-3PL
94	G	مدرسه ها نزدیک	mædrese-ha school-pl the schools ... near <i>the schools were near.</i>	næzdik ... near ...	e be-PRES-3SG	æn be-PRES-3PL	bud be.Past.3SG	bud-æn be.Past-3PL
95	G	تخت ها بزرگ	tæxt-ha bed-pl the beds ... big <i>the beds were big.</i>	bozorg ... big ...	e be-PRES-3SG	æn be-PRES-3PL	bud be.Past.3SG	bud-æn be.Past-3PL

Table B-1. Continued

No.	VT	preamble	gloss		possible target response			
96	G	برفها سفید ...	bærf-ha snow-pl the snow ... White <i>the snow were white.</i>	sefid ... white ...	e be-PRES-3SG	æn be-PRES-3PL	bud be.Past.3SG	bud-æn be.Past-3PL
97	G	گوشواره ها قشنگ ...	gushvare-ha ear ring-pl the ear rings ... beautiful <i>the ear rings were beautiful.</i>	qæshæng ... beautiful ...	e be-PRES-3SG	æn be-PRES-3PL	bud be.Past.3SG	bud-æn be.Past-3PL
98	G	شال ها ابریشمی ...	shal-ha shawl-pl the shawls ... silk <i>the shawls were silk.</i>	æbrishæmi ... silk ...	ye be-PRES-3SG	æn be-PRES-3PL	bud be.Past.3SG	bud-æn be.Past-3PL
99	H	زمینها سیراب ...	zæmin-ha land-pl the lands ... saturated <i>the lands were saturated.</i>	sirab ... saturated ...	mi-sh-e IND-become-3SG	mi-sh-æn IND-become-3PL	shod become.Past.3SG	shod-æn become.Past-3PL
100	H	ساعتها گم ...	sa'æt-ha watch-pl the watches... lost <i>the watches were lost.</i>	gom ... lost ...	mi-sh-e IND-become-3SG	mi-sh-æn IND-become-3PL	shod become.Past.3SG	shod-æn become.Past-3PL
101	H	لکه ها پاک ...	læke-ha stain-pl the stains ... wiped <i>the stains were wiped.</i>	pak ... wiped ...	mi-sh-e IND-become-3SG	mi-sh-æn IND-become-3PL	shod become.Past.3SG	shod-æn become.Past-3PL

Table B-1. Continued

No.	VT	preamble	gloss		possible target response			
102	H	سبزی ها پژمرده ...	sæbzi-ha herb-pl the herbs ... withered/faded <i>the herbs were withered/faded.</i>	pæzhmorde ... withered/faded ...	mi-sh-e IND-become-3SG	mi-sh-æn IND-become-3PL	shod become.Past.3SG	shod-æn become.Past-3PL
103	H	قایق ها غرق ...	qayeq-ha boat-pl the boats ... sunk <i>the boats were sunk.</i>	qærq ... sunk ...	mi-sh-e IND-become-3SG	mi-sh-æn IND-become-3PL	shod become.Past.3SG	shod-æn become.Past-3PL
104	H	بادکنک ها ول ...	badkonak-ha balloon-pl the balloons ... floated away <i>the balloons were floated away.</i>	vel ... floated away ...	mi-sh-e IND-become-3SG	mi-sh-æn IND-become-3PL	shod become.Past.3SG	shod-æn become.Past-3PL
105	H	بالونها را	balon-ha hot air balloon-pl the hot air balloons ... floated away <i>the hot air balloons are/were floated away.</i>	ræha ... floated away ...	mi-sh-e IND-become-3SG	mi-sh-æn IND-become-3PL	shod become.Past.3SG	shod-æn become.Past-3PL
106	H	انبارها خراب ...	ænbar-ha warehouse-pl the warehouses ... ruined <i>the warehouses were ruined.</i>	xærab ... ruined ...	mi-sh-e IND-become-3SG	mi-sh-æn IND-become-3PL	shod become.Past.3SG	shod-æn become.Past-3PL
107	H	سکه ها پیدا ...	seke-ha coin-pl the coins ... found <i>the coins were found.</i>	peida ... found ...	mi-sh-e IND-become-3SG	mi-sh-æn IND-become-3PL	shod become.Past.3SG	shod-æn become.Past-3PL

Table B-1. Continued

No.	VT	preamble	gloss	possible target response			
108	H	سیمان ها سخت ...	siman-ha sæxt ... cement-pl set ... the cement ... set <i>the sement became set.</i>	mi-sh-e IND-become-3SG	mi-sh-æn IND-become-3PL	shod become.Past.3SG	shod-æn become.Past-3PL
109	H	بستنی ها آب ...	bæstæni-ha ab ... ice-cream-pl water ... the ice-cream ... melted <i>the ice-cream was melted.</i>	mi-sh-e IND-become-3SG	mi-sh-æn IND-become-3PL	shod become.Past.3SG	shod-æn become.Past-3PL
110	H	رنگها خشک ...	ræng-ha xoshk ... paint-pl dry ... the paint ... dry <i>the paint dried.</i>	mi-sh-e IND-become-3SG	mi-sh-æn IND-become-3PL	shod become.Past.3SG	shod-æn become.Past-3PL
111	H	ورزشگاه ها نابود ...	varzeshgah-ha nabud ... stadium-pl ruined ... the stadiums ... ruined <i>the stadiums were ruined.</i>	mi-sh-e IND-become-3SG	mi-sh-æn IND-become-3PL	shod become.Past.3SG	shod-æn become.Past-3PL
112	H	تخم مرغ ها تمام ...	toxm-e morqha tæmam ... egg-EZ hen end ... the eggs ... end <i>the eggs ran out.</i>	mi-sh-e IND-become-3SG	mi-sh-æn IND-become-3PL	shod become.Past.3SG	shod-æn become.Past-3PL

Table B-2. List of the filler items for Verb Type Verb Tense experiment

No.	preamble	gloss	Possible response
1	من و فریبرز مسایل ریاضی رو حل ...	mæn væ færiboz məsa'el-e riyazi ro hæl ... I and Fariborz problems-EZ math OM solving ... Fariborz and I solving ... math problems <i>Fariborz and I solved the math problems.</i>	kærd-im mi-kon-im did-1pl IND-do-1pl
2	من و احسان هوای سرد رو دوست ...	mæn væ ehsan hæva-ye særd ro dust ... I and Ehsan weather-EZ cold OM loving ... Ehsan and I loving ... cold weather <i>Ehsan and I loved cold weather.</i>	dasht-im dar-im had-1pl have-1pl
3	شما و مهشید امتحان ...	shoma væ mæhshid emtehan you and Mahshid exam ... Mahshid and you exam ... <i>Mahshid and you took the exam.</i>	dad-in mi-deh-in gave-2pl IND-give-2pl
4	شما و حسن آب ماهی ها رو عوض ...	shoma væ hæsæn ab-e mahi-ha ro ævæz ... you and Hasan water-EZ fish-pl OM changing ... Hasan and you changing the water of the fish bowl <i>Hasan and you changed the water of the fish bowl.</i>	kærd-in mi-kon-in did.2pl IND-do.2pl
5	سارا و من از موزه دیدن ...	sara væ mæn æz muze didæn ... Sara and I from museum visiting ... Sara and I visiting the museum <i>Sara and I visited the museum.</i>	kærd-im mi-kon-im did-1pl IND-do-1pl
6	شهاب و شما درسها رو مرور ...	shæhab væ shoma dærs-ha ro morur ... Shahab and you lesson-pl OM reviewing ... Shahab and you reviewing ... the lessons <i>Shahab and you reviewed the lessons.</i>	kærd-in mi-kon-in did.2pl IND-do.2pl

Table B-2. Continued

No.	preamble	gloss	Possible response
7	کاوه و من همکلاس ...	kaveh væ Mæn hæmkelas ... Kaveh and I classmate ... Kaveh and I ... classmates. <i>Kaveh and I were classmates.</i>	bud-im hæst-im were-1pl be-1pl
8	نسترن و شما گلها رو آب ...	næstæræn væ shoma gol-ha ro ab ... Nastaran and you flower-pl OM water ... Nastaran and you watering ... the plants <i>Nastaran and you watered the plants.</i>	dad-in mi-deh-in gave-2pl IND-give-2pl
9	شما و نسرين با هم همکاري ...	shoma væ næsrin ba hæm hæmkari ... you and Nasrin with each other cooperating ... Nasrin and you cooperating ... with each other <i>Nasrin and you cooperated with each other.</i>	kærd-in mi-kon-in did.2pl IND-do.2pl
10	مليحه و من شيشه ها رو پاک ...	mælihe væ mæn shishe-ha ro pak ... Maliheh and I glass-pl OM cleaning ... Maliheh and I cleaning ... the glasses <i>Maliheh and I cleaned the glasses.</i>	kærd-im mi-kon-im did.1pl IND-do.1pl
11	شما و خواهرتان آشپزي ...	shoma væ xahær-etan ashpazi ... you and sister-your cooking ... you and your sister cooking ... <i>you and your sister cooked.</i>	kærd-in mi-kon-in did.2pl IND-do.2pl
12	سيروس و من قسم ...	syrus væ mæn qæsæm ... Syrus and I swearing ... Syrus and I swearing <i>Syrus and I swore.</i>	xord-im mi-xor-im collided.1pl IND-collide.1pl

Table B-2. Continued

No.	preamble	gloss				possible respond				
13	شما و ندا نقاشی ها رو رنگ ...	shoma	væ	neda	næqashi-ha	ro	ræng ...	kærd-in	mi-kon-in	
		you	and	Neda	drawing-pl	OM	painting ...	did.2pl	IND-do.2pl	
		you and Neda painting ... the drawings.								
		<i>you and Neda painted the drawings.</i>								
14	من و ژاله طناب بازی ...	mæn	væ	zhale		tænab-bazi	...	kærd-im	mi-kon-im	
		I	and	Zhale		rope-playing	...	did.1pl	IND-do.1pl	
		Zhaleh and I skipping ... the rope								
		<i>Zhaleh and I skipped the rope.</i>								
15	شما و مرضیه شاخه های اضافی رو قیچی	shoma	væ	mærziye	shaxe-ha-ye	ezafi	ro	qeichi ...	kærd-in	mi-kon-in
		you	and	Marziye	branch-pl-EZ	extra	OM	scissors ...	did.2pl	IND-do.2pl
		Marziyeh and you cutting ... the extra branches								
		<i>Marziyeh and you cutting the extra branches.</i>								
16	شنیدم که تو و امیر نامزد ...	shenid-æm		ke	to	væ	ami-r	namzæd ...	kærd-in	mi-kon-in
		heard-I		that	you	and	Ami-r	engaging ...	did.2pl	IND-do.2pl
		I heard that Amir and you engaging ...								
		<i>I heard that Amir and you engaged.</i>								
17	من و شیدا با هم آواز ...	mæn	væ	sheida	ba hæm		avaz ...	xund-im	mi-xun-im	
		I	and	Sheida	together		song ...	sang-1pl	IND-sing-1pl	
		Sheida and I singing.... together								
		<i>Sheida and I song together.</i>								
18	مهران و شما منطقه رو نقشه برداری ...	mehran	væ	shoma	mæntæqe	ro		bærdari ...	kærd-in	mi-kon-in
		Mehran	and	you	area	OM	map	drawing ...	did.2pl	IND-do.2pl
		Mehran and you drawing a map of the area								
		<i>Mehran and you drew a map of the area.</i>								

Table B-2. Continued

No.	preamble	gloss			possible respond	
19	من و شهرام کتاب رو خلاصه ...	mæn væ	shæhram ketab ro	xolase....	kærd-im	mi-kon-im
		I and	Shahram book OM	summarizing ...	did.1pl	IND-do.1pl
		Shahram and I summarizing .....the book				
		<i>Shahram and I summarized the book.</i>				
20	بهروز و تو برنامه ها رو ردیف ...	behruz væ	to bæname-ha ro	rædif ...	kærd-in	mi-kon-in
		Behruz and	you program-pl OM	organizing ...	did.2pl	IND-do.2pl
		Behrooz and you organizing ... the programs				
		<i>Behrooz and you organized the programs.</i>				
21	من و شیرین آهوها رو تماشا ...	mæn væ	shirin ahu-ha ro	tæmasha ...	kærd-im	mi-kon-im
		I and	Shirin deer-pl OM	watching ...	did.1pl	IND-do.1pl
		Shirin and I watching..... the deer				
		<i>Shirin and I watched the deer.</i>				
22	حمید گفت که رضا و تو کتابها رو جا جا ...	hæmid goft ke reza væ to ketab-ha	ro jabeja ...		kærd-in	mi-kon-in
		Hamid told that Reza and you book-pl	OM moving ...		did.2pl	IND-do.2pl
		Hamid told that Reza and you moving ... the books				
		<i>Hamid told that Reza and you moved the books.</i>				
23	شما و سحر تکالیف رو انجام ...	shoma væ	sæhær tækalif	ro ænjam ...	dad-in	mi-deh-in
		you and	Sahar homework	OM doing ...	gave.2pl	IND-give.2pl
		Sahar and you doing ... the homework				
		<i>Sahar and you did the homework.</i>				
24	من و بهمن حیاط رو جارو ...	mæn væ	bæhmæn hæyat	ro jaru ...	kærd-im	mi-kon-im
		I and	Bahman yard	OM sweeping ...	did.1pl	IND-do.1pl
		Bahman and I sweeping ... the yard				
		<i>Bahman and I swept the yard.</i>				

Table B-2. Continued

No.	preamble	gloss	possible respond	
25	فرشاد و شما دوستان صمیمی من ...	færshad væ shoma dustan-e sæmi-mi-e mæn ... Farshad and you friend-EZ intimate-EZ I ... Farshad and you my intimate friends <i>Farshad and you were my intimate friends.</i>	bud-in were-2pl	hæst-in be-2pl
26	من و فریبا سخنرانی رو گوش ...	mæn væ færiba soxænrani ro gush ... I and Fariba lecture OM ear ... Fariba and I listening to the lecture <i>Fariba and I listened to the lecture.</i>	kærd-im did.1pl	mi-kon-im IND-do.1pl
27	بیژن و من در یک شرکت کار ...	bizhæn væ dær yek sherkæt kar ... mæn Bijan and I in one company working ... Bijan and I working ... in the same company <i>Bijan and I worked in the same company.</i>	kærd-im did.1pl	mi-kon-im IND-do.1pl
28	من و مهین به هم کمک ...	mæn væ mæhin be hæm komæk ... I and Mahin to each other helping ... Mahin and I helping each other <i>Mahin and I helped each other.</i>	kærd-im did.1pl	mi-kon-im IND-do.1pl
29	سعید و من برای گردش برنامه ریزی ...	sa'id væ mæn bæraye gærdesh bænamerizi ... Saeed and I for picnic planning ... Saeed and I planning..... for the picnic <i>Saeed and I planed for the picnic.</i>	kærd-im did.1pl	mi-kon-im IND-do.1pl
30	روبا و تو دیوارها رو تزئین ...	roya væ to divar-ha ro taz'in ... Roya and you wall-pl OM decorating ... Roya and you decorating ... the walls <i>Roya and you decorated the walls.</i>	kærd-in did.2pl	mi-kon-in IND-do.2pl

Table B-2. Continued

No.	preamble	gloss				possible respond			
31	تو و احمد در ایستگاه اتوبوس معطل ...	to	væ	æhmæd	dær istgah-e	otobus mo'ætæł ...	shod-in	mi-sh-in	
		you	and	Ahmad	in stop-EZ	bus waiting ...	became.2pl	IND-become.2pl	
		Ahmad and you waiting ... at the bus stop							
		<i>Ahmad and you waited at the bus stop.</i>							
32	من و مادرم هم عقیده ...	mæn	væ	madær-æm		hæm æqide ...	bud-im	hæst-im	
		I	and	mother-my		same idea ...	were-1pl	be-1pl	
		my mother and I ... people of having the same ideas							
		<i>my mother and I had the same ideas.</i>							
33	من و لادن با هم عطسه ...	mæn	væ	ladæn	ba-hæm	ætse ...	kærd-im	mi-kon-im	
		I	and	Ladan	together	sneezing ...	did.1pl	IND-do.1pl	
		Ladan and I sneezing at the same time							
		<i>Ladan and I sneezed at the same time.</i>							
34	بهنام و تو به بچه ها غذا ...	behnam	væ	to	be bæche-ha	qæza ...	dad-in	mi-deh-in	
		Behnam	and	you	to child-pl	food ...	gave-2pl	IND-give-2pl	
		Behnam and you feeding ... the children							
		<i>Behnam and you fed the children.</i>							
35	من و شعله در خوابگاه دختران کار ...	mæn	væ	sho'le	dær xabgah-e	doxtær-an kar ...	kærd-im	mi-kon-im	
		I	and	Sholeh	in dorm-EZ	girl-pl working ..	did.1pl	IND-do.1pl	
		Sholeh and I working in the girls dormitory.							
		<i>Sholeh and I worked in the girls dormitory.</i>							
36	مهرانه گفت که بهنام و شما قبول ...	mehrane	goft	ke	behnam	væ	shoma qæbul ...	shod-in	mi-sh-in
		Mehrane	told	that	Behnam	and	you admitting ...	became.2pl	IND-become.2pl
		Mehrane told that Behnam and you admitting ...							
		<i>Mehrane told that Behnam and you admitted. ...</i>							

Table B-2. Continued

No.	Preamble	gloss	possible respond	
37	فرهاد و من کوهنوردی رو تجربه ...	færhad væ mæn kuh næværdi ro tæjrobe ... Farhad and I mountain climbing OM experiencing ... Farhad and I experiencing ... the mountain climbing together <i>Farhad and I experienced mountain climbing together.</i>	kærd-im did.1pl	mi-kon-im IND-do.1pl
38	شکوفه و تو در پروژه کار ...	shokufe væ to dær porozhe kar ... Shokufe and you in project working ... Shokufeh and you working ... in the project <i>Shokufeh and you worked on the project.</i>	kærd-in did.2pl	mi-kon-in IND-do.2pl
39	منوچهر و من همدیگر رو دوست ...	mænucwehr væ mæn hæmdigær ro dust ... Manucwehr and I each other OM loving ... Manoochehr and I loving ... each other <i>Manoochehr and I loved each other.</i>	dasht-im had-1pl	dar-im have-1pl
40	شراره و شما در مسابقه شرکت ...	shærare væ shoma dær mosabeqe sherkæt ... Sharareh and you in competition participating ... Sharareh and you participating ... in the competition <i>Sharareh and you participated in the competition.</i>	kærd-in did.2pl	mi-kon-in IND-do.2pl
41	مهرنوش جایزه ...	mehrnush jayeze ... mehrnush prize Mehrnush ... the prize <i>Mehrnush got the prize.</i>	gereft got.3SG	mi-gir-e IND-get-3SG
42	منیزه از موفقیت‌هایش تعریف ...	mænizhe æz movæfæqiyæt-ha-yæsh tærif ... Manizhe from success-pl-her talking ... Manizhe talking... of her successes <i>Manizhe talked of her successes.</i>	kærd did.3SG	mi-kon-e IND-do-3SG

Table B-2. Continued

No.	Preamble	gloss	possible respond	
43	پروین سه تا از شعر ها رو حفظ ...	pærvin se-ta æz she'r-ha ro hefz ... Parvin three from poem-pl OM memorizing ... Parvin memorizing ... three of the poems <i>Parvin memorized three of the poems.</i>	kærd did.3SG	mi-kon-e IND-do-3SG
44	مینا با بهرام درس ...	mina ba bæhram dærs Mina with Bahram lesson ... Mina studying ... with Bahram <i>Mina studied with Bahram.</i>	xund studied.3SG	mi-xun-e IND-study-3SG
45	خسرو سرما ...	xosro særma Khosro cold Bahman getting ... a cold <i>Bahman got a cold.</i>	xord collided.3SG	mi-xor-e IND-collid.3SG
46	حسن تاریخ ایران رو مطالعه ...	hæsæn tarix-e iran ro motale'eh ... Hasan history-EZ Iran OM studying ... Hasan studying ... the history of Iran <i>Hasan studied the history of Iran.</i>	kærd did.3SG	mi-kon-e IND-do-3SG
47	سیاوش برای شرکت کنندگان تار ...	siyavæsh bæraye sherkæt-konænde-gan tar Siyavæsh for participant-pl Tar Siyavash playing ... Tar music for the participants <i>Siyavash played Tar music for the participants.</i>	zæd stroke.3SG	mi-zæn-e IND-strike-3SG
48	خسرو نسترن رو صدا ...	xosro næstæræn ro seda ... Khosro Nastaran OM calling ... Khosro calling ... Nastaran <i>Khosro called Nastaran.</i>	kærd did.3SG	mi-kon-e IND-do-3SG

Table B-2. Continued

No.	preamble	gloss				possible respond			
49	شاهین فعالیت خوبی رو تجربه ...	shahin Shahin Shahin experiencing a good activity <i>Shahin experienced a good activity.</i>	fæ'aliyæt-e activity-EZ	xub-i good-one	ro OM	tæjrobe ... experiencing ...	kærd did.3SG	mi-kon-e IND-do-3SG	
50	مینو برای مسافرت آماده ...	minu Minu Minu preparing ... for the trip <i>Minu prepared for the trip.</i>	bæraye for	mosaferæt trip	amade ... preparing ...	shod became.3SG	mi-sh-e IND-become-3SG		
51	مرغابی بزرگی در آن طرف دریاچه لانه	morqabi-ye duck-EZ a big duck having... nest at the other side of the lake <i>a big duck had nest at the other side of the lake.</i>	bozorg-I big-one	dær at	an that	tæræf-e side-EZ	dæryache lane ... lake nest ...	dasht had.3SG	dar-e have-3SG
52	پرستو ماهی پلو تهیه ...	pæræstu Parastu Parastu preparing ... rice and fish <i>Parastu prepared rice and fish.</i>	mahi-polo fish-rice	tæhiye ... preparing ...			kærd did.3SG	mi-kon-e IND-do-3SG	
53	حسابدار شرکت درخواست بازنشستگی ...	hesabdar-e accountant-EZ the accountant of the company applying ... for retirement <i>the accountant of the company applied for retirement.</i>	sherkæt company	dærxast-e applying-EZ	bazneshæstegi ... retirement ...		kærd did.3SG	mi-kon-e IND-do-3SG	
54	پرندۀ به جوجه هایش غذا ...	pærænde bird the bird feeding ... her chicks <i>the bird fed her chicks .</i>	be to	juje-ha-yæsh chick-pl-her	qæza ... food ...		dad gave.3SG	mi-deh IND-give.3SG	

Table B-2. Continued

No.	preamble	gloss				possible respond	
55	کوروش سه بخش از نوشته ها رو ترجمه ...	kurosh se Kurosh three Kurosh translating ... <i>Kurosh translated three chapters of the texts.</i>	bæxsh æz chapter of three chapters of the texts	neveshte-ha text-pl OM translating ...	ro tærjome ... OM translating ...	kærd did.3SG	mi-kon-e IND-do-3SG
56	پدر اکرم مریض ...	pedær-e father-EZ Akram's father ... <i>Akram's father was sick.</i>	ækræm Akram	mæriz ... sick...		bud was.3SG	e be.3SG
57	مهشید نگران نمره هایش ...	mæhshid Mahshid Mahshid worrying ... <i>Mahshid worried for her grades.</i>	negæran-e worrying-EZ		nomre-ha-yæsh ... grade-pl-her ...	bud was.3SG	e be.3SG
58	صدیقه کاغذها رو رنگ ...	sediqe Sediqe Sedighe painting ... <i>Sedighe painted the papers.</i>	kaqæz-ha paper-pl	ro OM	ræng ... painting ...	kærd did.3SG	mi-kon-e IND-do-3SG
59	شبنم در مسابقه شرکت ...	shæbnæm Shabnam Shabnam participating ... <i>Shabnam participated in the competition.</i>	dær in	mosabeqe competition	sherkæt ... participating ...	kærd did.3SG	mi-kon-e IND-do-3SG
60	علی جغرافیا رو دوست ...	æli Ali Ali loving ... <i>Ali loved geography.</i>	joqrafiya geography	ro OM	dust ... loving ...	dasht had.3SG	dar-e have-3SG

Table B-2. Continued

No.	preamble	gloss				possible respond	
61	حدیث با علی موافق ...	hædis	ba	æli	movafeq ...	bud	e
		Hadis	with	Ali	agreeing ...	was.3SG	be.3SG
		Hadis agreeing ... with Ali					
		<i>Hadis agreed with Ali.</i>					
62	امید به اصفهان سفر ...	Omid	be	esfæhan	sæfær ...	kærd	mi-kon-e
		Omid	to	Esfahan	traveling ...	did.3SG	IND-do-3SG
		Omid traveling ... to Isfahan					
		<i>Omid traveled to Isfahan.</i>					
63	منیژه از همکلاسی اش کمک ...	mænizhe	æz	hæmkelasi-yæsh		komæk ...	mi-gir-e
		Manizhe	from	classmate-her		help ...	IND-take.3SG
		Manizheh asking ... help from her classmate					
		<i>Manizheh asked for help from her classmate.</i>					
64	پرستار دارو رو به مریض ...	pæræstar	daru	ro	be	mæriz ...	mi-deh
		nurse		medicine	OM	to	IND-give.3SG
		the nurse ... the medicines to the patient					
		<i>the nurse gave the medicines to the patient.</i>					
65	جمشید دو نامه برای گزنوش پست ...	jæmshid	do	name	bæraye	golnush	mi-kon-e
		Jamshid	two	letter	for	Golnush	IND-do-3SG
		Jamshid mailing ... two letters to Goli					
		<i>Jamshid mailed two letters to Goli.</i>					
66	نرگس از نمره هایش راضی ...	nærges	æz	nomre-ha-yæsh		razi ...	e
		Narges	from	score-pl-her		satisfied ...	be.3SG
		Narges satisfied ... with her scores					
		<i>Narges was satisfied with her scores.</i>					

Table B-2. Continued

No.	preamble	gloss	possible respond
67	افسانه برای مادرش یک کیف انتخاب ...	æfsane bəraye madær-æsh yek kif entexab ... Afsane for mother-her one bag selecting ... Afasaneh selecting ... a bag for her mother <i>Afasaneh selected a bag for her mother.</i>	kærd mi-kon-e did.3SG IND-do-3SG
68	هدیه گفت که افشین خیلی تلاش ...	hedye goft ke æfshin xeili tælash ... Hedye told that Afshin a lot trying ... Hedye told that Afshin trying ... a lot <i>Hedye told that Afshin tried a lot.</i>	kærd mi-kon-e did.3SG IND-do-3SG
69	فریدون کار دیگری پیدا ...	fereidun kar-e digæri peida Fereidun job_EZ another finding ... Fereidun finding ... another job <i>Fereidun found another job.</i>	kærd mi-kon-e did.3SG IND-do-3SG
70	همایون گفت که اضافه کاری ها رو پرداخت	homayun goft ke ezafe-kari-ha ro pærdaxt ... Homayun told that overtime-pl OM paying ... Homayoon told that (they) paying ... the overtimes <i>Homayoon told that (they) paid the overtimes.</i>	kærd-æn mi-kon-æn did.3pl IND-do.3pl
71	مهران هدفش رو توضیح ...	mehran hædæf-esh ro tozih ... Mehran goal-his OM explaining... Mehran explaining ... his goal <i>Mehran explained his goal.</i>	dad mi-deh gave.3SG IND-give.3SG
72	مهتاب ساعتش رو پیدا ...	mæhtab sa'æt-esh ro peida ... Mahtab watch-his OM finding ... Mahtab finding ... her watch <i>Mahtab found her watch.</i>	kærd mi-kon-e did.3SG IND-do-3SG

Table B-2. Continued

No.	preamble	gloss				possible respond	
73	شهرام ازدواج ...	shæhram Shahram Shahram marrying ... <i>Shahram married ...</i>	ezdevaj ... marrying			kærd did.3SG	mi-kon-e IND-do-3SG
74	ماهی کوچک در رودخانه شنا ...	mahi-e fish-EZ the little fish swimming ... <i>the little fish swam in the river.</i>	kuchæk little in the river	dær river	shena ... swimming ...	kærd did.3SG	mi-kon-e IND-do-3SG
75	پروانه در جشنواره جایزه ...	pærvane Parvaneh Parvaneh ... a prize in the festival <i>Parvaneh took a prize in the festival.</i>	dær in festival	jæshnvare festival	jayeze prize ...	gereft took.3SG	mi-gir-e IND-take-3SG
76	سیروس از مستاجرش شکایت ...	syrus Cyrus Cyrus complaining... of his lessee <i>Cyrus complained of his lessee.</i>	æz from	mostæjer-æsh lessee-his	shekayæt ... complaining ...	kærd did.3SG	mi-kon-e IND-do-3SG
77	فرزانه کتاب رمان رو نقد ...	færzane Farzaneh Farzaneh reviewing ... the novel <i>Farzaneh reviewed the novel.</i>	ketab-e book-EZ	roman novel	ro næqd ... OM reviewing ...	kærd did.3SG	mi-kon-e IND-do-3SG
78	سوسن ملافه ها رو اتو ...	susan Susan Susan ironing ... the bed sheets <i>Susan ironed the bed sheets.</i>	mælafe-ha sheet-pl	ro OM	otu ... ironing ...	kærd did.3SG	mi-kon-e IND-do-3SG

Table B-2. Continued

No.	preamble	gloss	possible respond	
79	پریسا با مهرداد بحث ...	<p>pærisa ba mehrdad bæhs ...</p> <p>Parisa with Mehrdad discussing ...</p> <p>Parisa discussing ... with Mehrdad</p> <p><i>Parisa discussed with Mehrdad.</i></p>	<p>kærd</p> <p>did.3SG</p>	<p>mi-kon-e</p> <p>IND-do-3SG</p>
80	مریم با مهری تلفنی صحبت ...	<p>mæryæm ba mehri telefon-i sohbat ...</p> <p>Maryam with Mehri telephone-on talking ...</p> <p>Maryam talked with Mehri on phone</p> <p><i>Maryam talked with Mehri on phone.</i></p>	<p>kærd</p> <p>did.3SG</p>	<p>mi-kon-e</p> <p>IND-do-3SG</p>

APPENDIX C
GLOSS- UNITY EXPERIMENT

Table C-1. List of the stimuli for Unity experiment

No.	str	Unity	NO	Preamble	gloss	possible target response
1a	Inch	IND	PL	درهای داخل چارچوبها رنگی ...	dær-ha-ye daxel-e char chub-ha rængi door-PL-EZ inside-EZ framework-PL colorful the doors in the frameworks ... mottled <i>the doors in the frameworks were mottled.</i>	shod /shod-æn became.3SG /became-3PL
1b	Inch	Unity	PL	درهای نزدیک چارچوبها رنگی ...	dær-ha-ye næzdik-e char chub-ha rængi door-PL-EZ near-EZ framework-PL colorful the doors near the frameworks ... mottled <i>the doors near the frameworks were mottled.</i>	shod /shod-æn became.3SG /became-3PL
1c	Inch	Unity	SG	درهای نزدیک چارچوب رنگی ...	dær-ha-ye næzdik-e char chub rængi door-PL-EZ near-EZ framework colorful the doors near the framework mottled <i>the doors near the framework were mottled.</i>	shod /shod-æn became.3SG /became-3PL
2a	Inch	IND	PL	چادرهای روی ماشینها پاره ...	chador-ha-ye ruy-e mashin-ha pare cover-PL-EZ on-EZ car-PL torn the covers on the cars ... torn. <i>the covers on the cars were torn.</i>	shod /shod-æn became.3SG /became-3PL
2b	Inch	Unity	PL	چادرهای نزدیک ماشینها پاره ...	chador-ha-ye næzdik-e mashin-ha pare cover-PL-EZ near-EZ car-PL torn the covers near the cars ... torn. <i>the covers near the cars were torn.</i>	shod /shod-æn became.3SG /became-3PL
2c	Inch	Unity	SG	چادرهای نزدیک ماشین پاره ...	chador-ha-ye næzdik-e mashin pare cover-PL-EZ near-EZ car torn the covers near the car ... torn. <i>the covers near the car were torn.</i>	shod /shod-æn became.3SG /became-3PL

Table C-1. Continued

No.	struc	Unity	NO	preamble	gloss	possible target response
3a	Inch	IND	PL	حوله های روی قلابها خیس ...	howle-ha-ye ruy-e qolab-ha xis towel-PL-EZ on-EZ hook-PL wet the towels on the hooks ....wet. <i>the towels on the hooks became wet.</i>	shod /shod-æn became.3SG /became-3PL
3b	Inch	Unity	PL	حوله های نزدیک قلابها خیس ...	howle-ha-ye næzdik-e qolab-ha xis towel-PL-EZ near-EZ hook-PL wet the towels near the hooks ....wet. <i>the towels near the hooks became wet.</i>	shod /shod-æn became.3SG /became-3PL
3c	Inch	Unity	SG	حوله های نزدیک قلاب خیس ...	howle-ha-ye næzdik-e qolab xis towel-PL-EZ near-EZ hook-PL wet the towels near the hook ....wet. <i>the towels near the hook became wet.</i>	shod /shod-æn became.3SG /became-3PL
4a	Inch	IND	PL	دستمال های روی بشقابها کثیف ...	dæstmal-ha-ye ruy-e boshqab-ha kæsif tissue-PL-EZ on-EZ plate-PL dirty the tissues on the plates ...dirty. <i>The tissues on the plates became dirty.</i>	shod /shod-æn became.3SG /became-3PL
4b	Inch	Unity	PL	دستمال های نزدیک بشقابها کثیف ...	dæstmal-ha-ye næzdik-e boshqab-ha kæsif tissue-PL-EZ near-EZ plate-PL dirty the tissues near the plates ...dirty. <i>The tissues near the plates became dirty.</i>	shod /shod-æn became.3SG /became-3PL
4c	Inch	Unity	SG	دستمال های نزدیک بشقاب کثیف ...	dæstmal-ha-ye næzdik-e boshqab kæsif tissue-PL-EZ near-EZ plate dirty the tissues near the plate ...dirty. <i>The tissues near the plate became dirty.</i>	shod /shod-æn became.3SG /became-3PL

Table C-1. Continued

No.	struc	Unity	NO	preamble	gloss	possible target response
5a	Inch	IND	PL	کمد‌های داخل اتاقها قدیمی ...	komod-ha-ye daxe-l-e otaq-ha qædimi dresser-PL-EZ inside-EZ room-PL old the dressers inside the rooms ...old <i>the dressers inside the rooms became old.</i>	shod /shod-æn became.3SG /became-3PL
5b	Inch	Unity	PL	کمد‌های بیرون اتاقها قدیمی ...	komod-ha-ye birun-e otaq-ha qædimi dresser-PL-EZ outside-EZ room-PL old the dressers outside the rooms ... old <i>the dressers outside the rooms became old.</i>	shod /shod-æn became.3SG /became-3PL
5c	Inch	Unity	SG	کمد‌های بیرون اتاق قدیمی ...	komod-ha-ye birun-e otaq qædimi dresser-PL-EZ outside-EZ room old the dressers outside the room ... old <i>the dressers outside the room became old.</i>	shod /shod-æn became.3SG /became-3PL
6a	Inch	IND	PL	جوراب‌های داخل کفش‌ها کهنه ...	jurab-ha-ye daxe-l-e kæfsh-ha kohne sock-PL-EZ inside-EZ shoes-PL old the socks in the shoes ...old. <i>The socks in the shoes became old.</i>	shod /shod-æn became.3SG /became-3PL
6b	Inch	Unity	PL	جوراب‌های نزدیک کفش‌ها کهنه ...	jurab-ha-ye næzdik-e kæfsh-ha kohne sock-PL-EZ near-EZ shoes-PL old the socks near the shoes ... old. <i>The socks near the shoes became old.</i>	shod /shod-æn became.3SG /became-3PL
6c	Inch	Unity	SG	جوراب‌های نزدیک کفش کهنه ...	jurab-ha-ye næzdik-e kæfsh kohne sock-PL-EZ near-EZ shoes old the socks near the shoe ...old. <i>The socks near the shoe became old.</i>	shod /shod-æn became.3SG /became-3PL

Table C-1. Continued

No.	struc	Unity	NO	preamble	gloss				possible target response
7a	Inch	IND	PL	موبایل های داخل کیف ها خاموش	mobayl-ha-ye	daxel-e	kif-ha	xamush	shod /shod-æn
					cell phone-PL-EZ	inside-EZ	bag-PL	off	became.3SG /became-3PL
					the cell phones in the bags ...off.				
					<i>The cell phones in the bags were turned off.</i>				
7b	Inch	Unity	PL	موبایل های نزدیک کیف ها خاموش	mobayl-ha-ye	næzdik-e	kif-ha	xamush	shod /shod-æn
					cell phone-PL-EZ	near-EZ	bag-PL	off	became.3SG /became-3PL
					the cell phones near the bags ...off.				
					<i>The cell phones near the bags were turned off.</i>				
7c	Inch	Unity	SG	موبایل های نزدیک کیف خاموش	mobayl-ha-ye	næzdik-e	kif	xamush	shod /shod-æn
					cell phone-PL-EZ	near-EZ	bag	off	became.3SG /became-3PL
					the cell phones near the bag ...off.				
					<i>The cell phones near the bag were turned off.</i>				
8a	Inch	IND	PL	ملافه های روی تختها کثیف ...	mælafe-ha-ye	ruy-e	tæxt-ha	læke dar	shod /shod-æn
					sheet-PL-EZ	on-EZ	bed-PL	stained	became.3SG /became-3PL
					the sheets on the beds ...stained				
					<i>the sheets on the beds were stained.</i>				
8b	Inch	Unity	PL	ملافه های کنار تختها کثیف ...	mælafe-ha-ye	kenar-e	tæxt-ha	læke dar	shod /shod-æn
					sheet-PL-EZ	beside-EZ	bed-PL	350tained	became.3SG /became-3PL
					the sheets beside the beds ...stained.				
					<i>The sheets beside the beds were stained.</i>				
8c	Inch	Unity	SG	ملافه های کنار تخت کثیف ...	mælafe-ha-ye	kenar-e	tæxt	læke dar	shod /shod-æn
					sheet-PL-EZ	beside-EZ	bed	350tained	became.3SG /became-3PL
					the sheets beside the bed ... stained.				
					<i>The sheets beside the bed were stained.</i>				

Table C-1. Continued

No.	struc	Unity	NO	preamble	gloss	possible target response
9a	Inch	IND	PL	لامپهای روی میزها روشن ...	lamp-ha-ye ruy-e miz-ha rowshæn lamp-PL-EZ on-EZ desk-PL on the lamps on the desks ... on. <i>The lamps on the desks were turned on.</i>	shod /shod-æn became.3SG /became-3PL
9b	Inch	Unity	PL	لامپهای نزدیک میزها روشن ...	lamp-ha-ye næzdik-e miz-ha rowshæn lamp-PL-EZ near-EZ desk-PL on the lamps near the desks ... on. <i>The lamps near the desks were turned on.</i>	shod /shod-æn became.3SG /became-3PL
9c	Inch	Unity	SG	لامپهای نزدیک میز روشن ...	lamp-ha-ye næzdik-e miz rowshæn lamp-PL-EZ near-EZ desk on the lamps near the desk ... on. <i>The lamps near the desk were turned on.</i>	shod /shod-æn became.3SG /became-3PL
10a	Inch	IND	PL	ملاقه های داخل قابلمه ها داغ ...	mælaqe-ha-ye daxel-e qablæme-ha daq ladle-PL-EZ inside-EZ pot-PL hot the ladles in the pots ...hot. <i>The ladles in the pots became hot.</i>	shod /shod-æn became.3SG /became-3PL
10b	Inch	Unity	PL	ملاقه های نزدیک قابلمه ها داغ ...	mælaqe-ha-ye næzdik-e qablæme-ha daq ladle-PL-EZ near-EZ pot-PL hot the ladles near the pots ...hot. <i>The ladles near the pots became hot.</i>	shod /shod-æn became.3SG /became-3PL
10c	Inch	Unity	SG	ملاقه های نزدیک قابلمه داغ ...	mælaqe-ha-ye næzdik-e qablæme daq ladle-PL-EZ near-EZ pot hot the ladles near the pot ...hot. <i>The ladles near the pot became hot.</i>	shod /shod-æn became.3SG /became-3PL

Table C-1. Continued

No.	struc	Unity	NO	preamble	gloss				possible target response
11a	Inch	IND	PL	آینه های داخل قابها کدر ...	ayene-ha-ye mirror-PL-EZ the mirrors in the frames ....opaque. <i>the mirrors in the frames became opaque.</i>	daxel-e inside-EZ	qab-ha frame-PL	keder opaque	shod /shod-æn became.3SG /became-3PL
11b	Inch	Unity	PL	آینه های نزدیک قابها کدر ...	ayene-ha-ye mirror-PL-EZ the mirrors near the frames Opaque. <i>The mirrors near the frames became opaque.</i>	næzdik-e near-EZ	qab-ha frame-PL	keder opaque	shod /shod-æn became.3SG /became-3PL
11c	Inch	Unity	SG	آینه های نزدیک قاب کدر ...	ayene-ha-ye mirror-PL-EZ the mirrors near the frame Opaque. <i>The mirrors near the frame became opaque.</i>	næzdik-e near-EZ	qab frame	keder opaque	shod /shod-æn became.3SG /became-3PL
12a	Inch	IND	PL	استخرهای داخل باغ ها پر	estæxr-ha-ye pool-PL-EZ the pools in the gardens ... full. <i>The pools in the gardens became full.</i>	daxel-e inside-EZ	baq-ha garden-PL	por full	shod /shod-æn became.3SG /became-3PL
12b	Inch	Unity	PL	استخرهای نزدیک باغ ها پر	estæxr-ha-ye pool-PL-EZ the pools near the gardens ...full. <i>The pools near the gardens became full.</i>	næzdik-e near-EZ	baq-ha garden-PL	por full	shod /shod-æn became.3SG /became-3PL
12c	Inch	Unity	SG	استخرهای نزدیک باغ پر	estæxr-ha-ye pool-PL-EZ the pools near the garden ...full. <i>The pools near the garden became full.</i>	næzdik-e near-EZ	baq garden	por full	shod /shod-æn became.3SG /became-3PL

Table C-1. Continued

No.	struc	Unity	NO	preamble	gloss	possible target response
13a	Pass	IND	PL	تلویزیون های روی میزها دزدیده ...	televiziun-ha-ye ruy-e miz-ha dozdid-e television-PL-EZ on-EZ table-PL stole-pp the TVs on the tables ...stolen. <i>The TVs on the tables were stolen.</i>	shod /shod-æn became.3SG /became-3PL
13b	Pass	Unity	PL	تلویزیون های نزدیک میزها دزدیده ...	televiziun-ha-ye næzdik-e miz-ha dozdid-e television-PL-EZ near-EZ table-PL stole-pp the TVs near the tables ...stolen. <i>The TVs near the tables were stolen.</i>	shod /shod-æn became.3SG /became-3PL
13c	Pass	Unity	SG	تلویزیون های نزدیک میز دزدیده ...	televiziun-ha-ye næzdik-e miz dozdid-e television-PL-EZ near-EZ table stole-pp the TVs near the table ...stolen. <i>The TVs near the table were stolen.</i>	shod /shod-æn became.3SG /became-3PL
14a	Pass	IND	PL	قوری های روی سماورها فروخته ...	quri-ha-ye ruy-e sëmavær-ha foruxt-e tea pot-PL-EZ on-EZ samovar-PL sold-pp the teapots on the samovars ...sold. <i>The teapots on the samovars were sold.</i>	shod /shod-æn became.3SG /became-3PL
14b	Pass	Unity	PL	قوری های نزدیک سماورها فروخته ...	quri-ha-ye næzdik-e sëmavær-ha foruxt-e tea pot-PL-EZ near-EZ samovar-PL sold-pp the teapots near the samovars ...sold. <i>The teapots near the samovars were sold.</i>	shod /shod-æn became.3SG /became-3PL
14c	Pass	Unity	SG	قوری های نزدیک سماور فروخته ...	quri-ha-ye næzdik-e sëmavær foruxt-e tea pot-PL-EZ near-EZ samovar sold-pp the teapots near the samovar ...sold. <i>The teapots near the samovar were sold.</i>	shod /shod-æn became.3SG /became-3PL

Table C-1. Continued

No.	struc	Unity	NO	preamble	gloss				possible target response
15a	Pass	IND	PL	انگشترهای داخل جعبه ها فرستاده	ængoshtær-ha-ye ring-PL-EZ the rings inside the boxes ...sent. <i>The rings inside the boxes were sent.</i>	daxel-e inside-EZ	jæbe-ha box-PL	ferestad-e sent-pp	shod /shod-æn became.3SG /became-3PL
15b	Pass	Unity	PL	انگشترهای نزدیک جعبه ها فرستاده	ængoshtær-ha-ye ring-PL-EZ the rings near the boxes ...sent. <i>The rings near the boxes were sent.</i>	næzdik-e near-EZ	jæbe-ha box-PL	ferestad-e sent-pp	shod /shod-æn became.3SG /became-3PL
15c	Pass	Unity	SG	انگشترهای نزدیک جعبه فرستاده	ængoshtær-ha-ye ring-PL-EZ the rings near the box ...sent. <i>The rings near the box were sent.</i>	næzdik-e near-EZ	jæbe box	ferestad-e sent-pp	shod /shod-æn became.3SG /became-3PL
16a	Pass	IND	PL	عینک های توی جلد ها شمرده ...	einæk-ha-ye glasses-PL-EZ the glasses in the cases ...counted. <i>The glasses in the cases were counted.</i>	tu-ye in-EZ	jeld-ha case-PL	shomord-e counted-pp	shod /shod-æn became.3SG /became-3PL
16b	Pass	Unity	PL	عینک های نزدیک جلد ها شمرده .	einæk-ha-ye glasses-PL-EZ the glasses near the cases ...counted. <i>The glasses near the cases were counted.</i>	næzdik-e near-EZ	jeld-ha case-PL	shomord-e counted-pp	shod /shod-æn became.3SG /became-3PL
16c	Pass	Unity	SG	عینک های نزدیک جلد شمرده ...	einæk-ha-ye glasses-PL-EZ the glasses near the case ...counted. <i>The glasses near the case were counted.</i>	næzdik-e near-EZ	jeld case	shomord-e counted-pp	shod /shod-æn became.3SG /became-3PL

Table C-1. Continued

No.	struc	Unity	NO	preamble	gloss	possible target response
17a	Pass	IND	PL	خانه های داخل مزرعه ها ساخته ..	xane-ha-ye daxel-e mæzræ'e-ha saxt-e house-PL-EZ inside-EZ farm-PL built-pp the houses in the farms ...built. <i>The houses in the farms were built.</i>	shod /shod-æn became.3SG /became-3PL
17b	Pass	Unity	PL	خانه های نزدیک مزرعه ها ساخته ...	xane-ha-ye næzdik-e mæzræ'e-ha saxt-e house-PL-EZ near-EZ farm-PL built-pp the houses near the farms ...built. <i>The houses near the farms were built.</i>	shod /shod-æn became.3SG /became-3PL
17c	Pass	Unity	SG	خانه های نزدیک مزرعه ساخته ...	xane-ha-ye næzdik-e mæzræ'e saxt-e house-PL-EZ near-EZ farm built-pp the houses near the farm ...built. <i>The houses near the farm were built.</i>	shod /shod-æn became.3SG /became-3PL
18a	Pass	IND	PL	دستگیره های روی درها شکسته ...	dæstgire-ha- ruy-e dær-ha shekæst-e ye handle-PL-EZ on-EZ door-PL broke-pp the handles on the doors ...broken. <i>The handles on the doors were broken.</i>	shod /shod-æn became.3SG /became-3PL
18b	Pass	Unity	PL	دستگیره های نزدیک درها شکسته ...	dæstgire-ha- næzdik-e dær-ha shekæst-e ye handle-PL-EZ near-EZ door-PL broke-pp the handles near the doors ...broken. <i>The handles near the doors were broken.</i>	shod /shod-æn became.3SG /became-3PL
18c	Pass	Unity	SG	دستگیره های نزدیک در شکسته ...	dæstgire-ha- næzdik-e dær shekæst-e ye handle-PL-EZ near-EZ door broke-pp the handles near the door ...broken. <i>The handles near the door were broken.</i>	shod /shod-æn became.3SG /became-3PL

Table C-1. Continued

No.	struc	Unity	NO	preamble	gloss				possible target response
19a	Pass	IND	PL	کیسه های داخل سطلها ریخته ...	kise-ha-ye bag-PL-EZ the bags in the buckets ...poured. <i>The bags in the buckets were poured.</i>	daxel-e inside-EZ	sætl-ha bucket-PL	rixt-e poured-pp	shod /shod-æn became.3SG /became-3PL
19b	Pass	Unity	PL	کیسه های نزدیک سطلها ریخته .	kise-ha-ye bag-PL-EZ the bags near the buckets ...poured. <i>The bags near the buckets were poured.</i>	næzdik-e near-EZ	sætl-ha bucket-PL	rixt-e poured-pp	shod /shod-æn became.3SG /became-3PL
19c	Pass	Unity	SG	کیسه های نزدیک سطل ریخته ...	kise-ha-ye bag-PL-EZ the bags near the bucket ...poured. <i>The bags near the bucket were poured.</i>	næzdik-e near-EZ	sætl bucket	rixt-e poured-pp	shod /shod-æn became.3SG /became-3PL
20a	Pass	IND	PL	فرشهای داخل راهروها شسته ...	færsh-ha-ye rug-PL-EZ the rugs inside the corridors ...washed. <i>The rugs inside the corridors were washed.</i>	daxel-e inside-EZ	rahrow-ha corridor-PL	shost-e washed-pp	shod /shod-æn became.3SG /became-3PL
20b	Pass	Unity	PL	فرشهای بیرون راهروها شسته ...	færsh-ha-ye rug-PL-EZ the rugs outside the corridors ...washed. <i>The rugs outside the corridors were washed.</i>	birun-e outside-EZ	rahrow-ha corridor-PL	shost-e washed-pp	shod /shod-æn became.3SG /became-3PL
20c	Pass	Unity	SG	فرشهای بیرون راهرو شسته ...	færsh-ha-ye rug-PL-EZ the rugs outside the corridor ...washed. <i>The rugs outside the corridor were washed.</i>	birun-e outside-EZ	rahrow corridor	shost-e washed-pp	shod /shod-æn became.3SG /became-3PL

Table C-1. Continued

No.	struc	Unity	NO	preamble	gloss				possible target response
21a	Pass	IND	PL	فنجانهای روی نعلبکی ها برداشته ...	fenjan-ha-ye cup-PL-EZ the cups on the saucers ...taken. <i>The cups on the saucers were taken.</i>	ruy-e on-EZ	nælbæki-ha saucer-PL	bærdasht-e took-pp	shod /shod-æn became.3SG /became-3PL
21b	Pass	Unity	PL	فنجانهای نزدیک نعلبکی ها برداشته .	fenjan-ha-ye cup-PL-EZ the cups near the saucers ...taken. <i>The cups near the saucers were taken.</i>	næzdik-e near-EZ	nælbæki-ha saucer-PL	bærdasht-e took-pp	shod /shod-æn became.3SG /became-3PL
21c	Pass	Unity	SG	فنجانهای نزدیک نعلبکی برداشته ...	fenjan-ha-ye cup-PL-EZ the cups near the saucer ...taken. <i>The cups near the saucer were taken.</i>	næzdik-e near-EZ	nælbæki saucer	bærdasht-e took-pp	shod /shod-æn became.3SG /became-3PL
22a	Pass	IND	PL	نخهای توی سوزنها بریده ...	næx-ha-ye string-PL-EZ the strings in the needles .....cut. <i>The strings in the needles were cut.</i>	tu-ye in-EZ	suzæn-ha needle-PL	borid-e cut-pp	shod /shod-æn became.3SG /became-3PL
22b	Pass	Unity	PL	نخهای نزدیک سوزنها بریده ...	næx-ha-ye string-PL-EZ the strings near the needles .....cut. <i>The strings near the needles were cut.</i>	næzdik-e near-EZ	suzæn-ha needle-PL	borid-e cut-pp	shod /shod-æn became.3SG /became-3PL
22c	Pass	Unity	SG	نخهای نزدیک سوزن بریده ...	næx-ha-ye string-PL-EZ the strings near the needle .....cut. <i>The strings near the needle were cut.</i>	næzdik-e near-EZ	suzæn needle	borid-e cut-pp	shod /shod-æn became.3SG /became-3PL

Table C-1. Continued

No.	struc	Unity	NO	preamble	gloss				possible target response
23a	Pass	IND	PL	نگین های روی انگشترها پسندیده ...	negin-ha-ye gem-PL-EZ the gems on the rings ... chosen. <i>The gems on the rings were chosen.</i>	ruy-e on-EZ	ængoshtær- ha ring-PL	pæsændid-e chose-pp	shod /shod-æn became.3SG /became-3PL
23b	Pass	Unity	PL	نگین های نزدیک انگشترها پسندیده	negin-ha-ye gem-PL-EZ the gems near the rings ... chosen. <i>The gems near the rings were chosen.</i>	næzdik-e near-EZ	ængoshtær- ha ring-PL	pæsændid-e chose-pp	shod /shod-æn became.3SG /became-3PL
23c	Pass	Unity	SG	نگین های نزدیک انگشتر پسندیده ...	negin-ha-ye gem-PL-EZ the gems near the ring ... chosen. <i>The gems near the ring were chosen.</i>	næzdik-e near-EZ	ængoshtær ring	pæsændid-e chose-pp	shod /shod-æn became.3SG /became-3PL
24a	Pass	IND	PL	کروات های روی پیراهن ها خریده	keravat-ha-ye tie-PL-EZ the ties on the shirts ... bought. <i>The ties on the shirts were bought.</i>	ruy-e on-EZ	pirahæn-ha shirt-PL	xærid-e bought-pp	shod /shod-æn became.3SG /became-3PL
24b	Pass	Unity	PL	کروات های نزدیک پیراهن ها خریده	keravat-ha-ye tie-PL-EZ the ties near the shirts ... bought. <i>The ties near the shirts were bought.</i>	næzdik-e near-EZ	pirahæn-ha shirt-PL	xærid-e bought-pp	shod /shod-æn became.3SG /became-3PL
24c	Pass	Unity	SG	کروات های نزدیک پیراهن خریده .	keravat-ha-ye tie-PL-EZ the ties near the shirt ... bought. <i>The ties near the shirt were bought.</i>	næzdik-e near-EZ	pirahæn shirt	xærid-e bought-pp	shod /shod-æn became.3SG /became-3PL

Table C-2. List of the filler items for Unity & Concreteness experiment

item	preamble	gloss						possible response		
1	سوسن ملافه ها رو اطو ...	susan	mælafe-ha	ro	out	...	kærd			
		Susan	sheet-PL	OM	iron	...	did.3SG			
		Susan ironing ... the sheets. <i>Susan ironed the sheets.</i>								
2	من و شعله در خوابگاه دختران کار ...	mæn	væ	shole	dær	xabgahe	doxtæran	kar	...	kærd-im
		I	and	Shole	in	dormitory	girls	working	...	did.1PL
		Shole and I working ... in girls dormitory. <i>Shole and I worked in the girls dormitory.</i>								
3	سعید و من برای گردش برنامه ریزی ...	sæ'id	væ	mæn	bæraye	gærdesh	bærname	rizi	...	kærd-im
		Sa'id	and	I	for	picnic	planning	...	did.1PL	
		Sa'id and I planning for picnic. <i>Sa'id and I planed for the picnic.</i>								
4	من و بهمن حیاط رو جارو ...	mæn	væ	bæhmæn	hæyat	ro	jaru	...	kærd-im	
		I	and	Bahman	yard	OM	sweeping	...	did.1PL	
		Bahman and I sweeping ... the yard. <i>Bahman and I swept the yard.</i>								
5	پریسا با مهرداد بحث ...	pærisa	ba	mehrdad	bæhs	...	kærd			
		Parisa	with	Mehrdad	arguing	...	did.3SG			
		Parisa arguing ... with Mehrdad. <i>Parisa argued with Mehrdad.</i>								
6	شکوفه و تو در پروژه شرکت ...	shokufe	væ	to	dær	porozhe	sherkæt	...	kærd-in	
		Shokufe	and	you	in	project	participating	...	did.2PL	
		Shokufe and you participating ... in the project. <i>Shokufe and you participated in the project.</i>								

Table C-2. Continued

item	preamble	gloss					possible response		
7	سیروس از مستاجرش شکایت ...	sirus	æz	mostæjer-æsh	shekayæt	...	kærd		
		Sirus	from	tenant-his	complaining	...	did.3SG		
		Sirus complaining ... form his tenant. <i>Sirus complained form his tenant.</i>							
8	شراره و شما در مسابقه شرکت ...	shærare	væ	shoma dær	mosabeqe	sherkæt	...	kærd-in	
		Sharare	and	you	in	competition	participating	...	did.2PL
		Sharare and you participating ... in the competition. <i>Sharare and you participated in the competition.</i>							
9	بیژن و من در یک شرکت کار ...	bizhæn	væ	mæn	yek	sherkæt	kar	...	kærd-im
				dær				...	did.1PL
		Bizhan and I working ... in a company. <i>Bizhan and I worked in a company.</i>							
10	فرهاد و من کوهنوردی رو تجربه ...	færhad	væ	mæn	kuhnæværđi	ro	tæjrobe	...	kærd-im
		Farhad	and	I	mountain		OM experiencing	...	did.1PL
		Farhad and I experiencing ... mountain climbing. <i>Farhad and I experienced mountain climbing.</i>							
11	ملیحه و من شیشه ها رو پاک ...	mælihe	væ	mæn	shishe-ha	ro	pak	...	kærd-im
		Malihe	and	I	glass-PL	OM	cleaning	...	did.1PL
		Malihe and I cleaning ... the glasses. <i>Malihe and I cleaned the glasses.</i>							
12	بهروز و تو برنامه ها رو ردیف ...	behruz	væ	to	bærname-ha	ro	ræđif	...	kærd-in
		Behruz	and	you	plan-PL	OM	organizing	...	did.2PL
		Behruz and you organizing ... the plans. <i>Behruz and you organized the plans.</i>							

Table C-2. Continued

item	preamble	gloss					possible response	
13	ماهی کوچک در رودخانه شنا ...	mahi fish	kuchik small	dær in	rudxune shena ... river swimming	... ...	kærd did.3SG
		the little fish swimming ... in the river. <i>the little fish swam in the river.</i>						
14	شما و خواهرتان آشپزی ...	shoma you and	væ sister-your	xahær-etan cooking	ashpæzi ...	...	kærd-in did.2PL
		you and your sister cooking ... <i>you and your sister cooked.</i>						
15	جمشید دو نامه برای گزنوش پُست ...	jæmshid Jamshid two	do letters	name for	bæraye golnush post ... Golnush posting ...	...	kærd did.3SG
		Jamshid posting ... two letters for Golnush <i>Jamshid posted two letters for Golnush.</i>						
16	شما و ندا نقاشی ها و رنگ ...	shoma you and	væ Neda	neda drawing-PL	næqashi-ha ro ræng ... OM painting ...	...	kærd-in did.2PL
		you and Neda painting ... the drawings. <i>you and Neda painted the drawings.</i>						
17	مریم با مهری تلفنی صحبت ...	mæryæm Maryam	ba with	mehri Mehri	telefon-i telephone-with	sohbæt talking	kærd did.3SG
		Maryam with Mehri talking ... with telephone. <i>Maryam with Mehri talked with telephone.</i>						
18	من و ژاله طناب بازی ...	mæn I	væ and	zhale zhale	tænab bazi rope playing	... ...	kærd-im did.1PL
		Zhale and I skipping ... rope. <i>Zhale and I skipped rope.</i>						

Table C-2. Continued

item	preamble	gloss					possible response	
19	مهرانه گفتم که بهنام و شما قبول ...	mehran	goft	ke	behnam	væ	shoma qabul ...	kærd-in did.2PL
		Mehran	told	that	Behnam	and	you accepting ...	
		Mehran told that Behnam and you accepting ...						
		<i>Mehran told that Behnam and you accepted.</i>						
20	شنیدم که تو و امیر نامزد ...	shenid-æm	ke	to	væ	æmir	namzæd ...	kærd-in did.2PL
		heard-1SG	that	you	and	Amir	engaging ...	
		I heard that you and Amir engaging ...						
		<i>I heard that you and Amir are engaged.</i>						
21	بهنام و تو به بچه ها غذا ...	behnam	væ	to	be	bæche-ha	qæza ...	dad-in gave-2PL
		Behnam	and	you	to	child-PL	food ...	
		Behnam and you food to the children.						
		<i>Behnam and you fed the children.</i>						
22	من و شیدا با هم آواز ...	mæn	væ	sheida	ba hæm	avaz	... ..	xand-im sang-1PL
		I	and	Sheida	together	singing	... ..
		Sheida and I singing ... together.						
		<i>Sheida and I sang together.</i>						
23	پروانه در جشنواره جایزه ...	pærvane	dær		jæshnvare	jayeze	... ..	gereft got.3SG
		Parvane	in		festival	prize	... ..
		Parvane prize in the festival.						
		<i>Parvane got a prize in the festival.</i>						
24	مهرنوش جایزه ...	mehrnush	jayeze				... ..	bord took.3SG
		mehrnush	prize				... ..
		Mehrnush ... Prize						
		<i>Mehrnush took a prize.</i>						
25	من و لادن با هم عطسه ...	mæn	væ	ladæn	ba hæm	ætse	... ..	zæd-im strike.1PL
		I	and	Ladan	together	sneezing	... ..
		Ladan and I sneezing ... Together.						
		<i>Ladan and I sneezed together.</i>						

Table C-2. Continued

item	preamble	gloss					possible response
26	مینا با بهرام درس ...	Mina	ba	bæhram	dærs	...	xund-æn
		Mina	with	Bæhram	lesson	...	read-3PL
		Mina and Bahram ... lesson. <i>Mina and Bahram read the lesson.</i>					
27	افسانه برای مادرش یک کیف انتخاب ...	æfsane	bæraye	madær-æsh	yek kif entexab	...	kærd
		Afsane	for	mother-her	one ba choosing	...	did.3SG
		Afsane choosing ... one bag for her mother. <i>Afsane chose a bag for her mother.</i>					
28	حسن تاریخ ایران رو مطالعه ...	hæsæn	tarix-e	iran	ro	motale'e	...
		hæsæn	history-EZ	Iran	OM	studying	...
		Hasan studying ... the history of Iran. <i>Hasan studied the history of Iran.</i>					kærd
							did.3SG
29	فریدون کار دیگری پیدا ...	fereidun	kar-e	digæri	peida	...	kærd
		Fereidun	job-EZ	another	finding	...	did.3SG
		Fereidun finding ... another job. <i>Fereidun found another job.</i>					
30	خسرو نسترن رو صدا ...	xosro	næstæræn	ro	seda	...	kærd
		Xosro	Nastaran	OM	calling	...	did.3SG
		Xosro calling ... Nastaran. <i>Xosro called Nastaran.</i>					
31	منوچهر و من همدیگر رو دوست ...	mænuchehr	væ mæn	hæmdigær	ro dust	...	dasht-im
		Manuchehr	and I	each other	OM loving	...	had-1PL
		Manucher and I loving each other. <i>Manucher and I loved each other.</i>					
32	مینو برای مسافرت آماده ...	minu	bæraye	mosaferæt	amade	...	shod
		Minu	for	travel	preparing	...	become.3SG
		Minu preparing ... for travel. <i>Minu was prepared for the travel.</i>					

Table C-2. Continued

item	preamble	gloss					possible response		
33	من و فربيا سخترانی رو گوش ...	mæn	væ	færiba	soxænrani	ro	gush	...	kærd-im
		I	and	Fariba	lecture	OM	listening	...	did.1PL
		Fariba and I listening ... to the lecture. <i>Fariba and I listened to the lecture.</i>							
34	پرستو ماهی پلو تهیه ...	pæræstu		mahi	polo	tæhiye		...	kærd
		Parastu		fish	rice	preparing		...	did.3SG
		Parastu preparing ... fish and rice. <i>Parastu prepared fish and rice.</i>							
35	رویا و تو دیوارها رو تزین ...	roya	væ	to	divar-ha	ro	tæz'in	...	kærd-in
		Roya	and	you	wall-PL	OM	decorate	...	did.2PL
		Roya and you decorating ... the walls. <i>Roya and you decorated the walls.</i>							
36	سیروس و من قسم ...	sirus	væ	mæn	qæsæm			...	xord-im
		Sirus	and	I	oath			...	ate-1PL
		Sirus and I oath ... <i>Sirus and I took an oath.</i>							
37	صدیقه کاغذها رو رنگ ...	sediqe		kaqæz-ha	ro	ræng		...	kærd
		Sediqe		paper-PL	OM	painting		...	did.3SG
		sediqe painting ... the papers. <i>sediqe painted the papers.</i>							
38	شما و سحر تکالیف رو انجام ...	shoma	væ	sæhær	tækalif	ro	ænjam	...	dad-in
		you		Sahar	assignment	OM	doing	...	gave-2PL
		and							
		Sahar and you doing ... the assignment. <i>Sahar and you did the assignment.</i>							

Table C-2. Continued

item	preamble	gloss					possible response					
39	شبنم در مسابقه شرکت ...	shæbnæm	dær	mosabeqe	sherkæt	...	kærd					
		Shabnæm	in	competition	participating	...	did.3SG					
		Shabnam participating ... in the competition. <i>Shabnam participated in the competition.</i>										
40	من و مهین به هم کمک ...	mæn	væ	mæhin	be	hæm	komæk	...	kærd-im			
		I	and	Mahin	to	each other	helping	...	did.1PL			
		Mahin and I helping ... each other. <i>Mahin and I helped each other.</i>										
41	پرستار دارو رو به مریض ...	pæræstar	daru	ro	be	mæriz	...	dad				
		nurse	medicine	OM	to	patient	...	gave.3SG				
		The nurse the medicine to the patient. <i>The nurse gave the medicine to the patient.</i>										
42	حمید گفت که رضا و تو کتابها رو جا جا ...	hæmid	goft	ke	reza	va	to	ketab-ha	ro	jabeja	...	kærd-in
		Hamid	told	that	Reza	and	you	book-	OM	moving	...	did.2PL
		Hamid told that Reza and you moving ... the books. <i>Hamid told tha Reza and you changed the place of the books.</i>										
43	علی جغرافیا رو دوست ...	æli	joqrafia	ro	dust	...	dasht					
		Ali	geography	OM	liking	...	had.3SG					
		Ali liking ... Geography. <i>Ali liked Geography.</i>										
44	منیژه از همکلاسی اش کمک ...	mænizhe	æz	hæmkelasi-æsh	komæk	...	gereft					
		Manizhe	from	classmate-her	help	...	got.3SG					
		Manizhe ... help form her classmate. <i>Manizhe got help form her classmate.</i>										

Table C-2. Continued

item	preamble	gloss						possible response
45	مهتاب ساعتش رو پیدا ...	mæhtab	sa'æt-æsh	ro	peida	...	kærd	
		Mæhtab	watch-her	OM	finding	...	did.3SG	
		Mahtab finding her watch. <i>Mahtab found her watch.</i>						
46	فرزانه کتاب رمان رو نقد ...	færzane	ketab-e	roman	ro	næqd	...	
		Farzane	book-EZ	novel	OM	reviewing	...	
		Farzane reviewing ... the novel. <i>Farzane reviewed ... the novel.</i>						
47	خسرو سرما ...	xosro	særma	...	...	...	xord
		xosro	cold	...	...	...	ate.3SG
		xosro cold. <i>xosro got cold.</i>						
48	همایون گفت که اضافه کاری ها رو پرداخت ...	homayun	goft	ke	ezafe kari-ha	ro	pærdaxt	
		Homayun	told	that	overtime-PL	OM	paying	
		Homayun told that they paying ... the overtimes. <i>Homayun told that they paid the overtimes.</i>						

APPENDIX D
GLOSS- CONCRETENESS EXPERIMENT

Table D-1. List of the stimuli for Concreteness experiment

item	structure	condition	preamble	gloss	possible target response
1a	inchoative	abstract	واقعیت ها پدیدار ...	vaqe'iyæt-ha pædidar ... reality-PL visible ... the realities ... visible. <i>the realities became visible.</i>	shod /shod-æn became.3SG /became-3PL
1b	inchoative	concrete	کشتی ها پدیدار ...	keshti-ha pædidar ... ship-PL visible ... the ships ... visible. <i>the ships became visible.</i>	shod /shod-æn became.3SG /became-3PL
2a	inchoative	abstract	مشکل ها نزدیک ...	moskel-ha næzdik ... problem-PL close ... the problems ... close. <i>the problems became close.</i>	shod /shod-æn became.3SG /became-3PL
2b	inchoative	concrete	گاری ها نزدیک ...	gari-ha næzdik ... cart-PL close ... the carts ... close. <i>the carts became close.</i>	shod /shod-æn became.3SG /became-3PL
3a	inchoative	abstract	سخت گیری ها قطع	sæxtgiri-ha qæt' severity-PL cut ... the severities ... cut. <i>the severities were cut.</i>	shod /shod-æn became.3SG /became-3PL
3b	inchoative	concrete	آبها قطع ...	ab-ha qæt' water-PL cut ... the waters ... cut. <i>the water (in the pipe) was cut.</i>	shod /shod-æn became.3SG /became-3PL

Table D-1. Continued

item	structure	condition	preamble	gloss			possible target response	
4a	inchoative	abstract	محبت ها کم ...	mohæbæt-ha	kæm	...	shod	/shod-æn
				affection-PL	less	...	became.3SG	/became-3PL
				the affections ... less.				
				<i>the affections were decreased.</i>				
4b	inchoative	concrete	مداد ها کم ...	medad-ha	kæm	...	shod	/shod-æn
				pencil-PL	less	...	became.3SG	/became-3PL
				the pencils ... less.				
				<i>the pencils were decreased.</i>				
5a	inchoative	abstract	پیشرفت ها مشخص ...	pishræft-ha	moshæxæs	...	shod	/shod-æn
				development-PL	clear	...	became.3SG	/became-3PL
				the developments ... clear/visible.				
				<i>the developments became clear.</i>				
5b	inchoative	concrete	چراغ ها مشخص ...	cheraq-ha	moshæxæs	...	shod	/shod-æn
				light-PL	clear	...	became.3SG	/became-3PL
				the lights ... clear.				
				<i>the lights became clear/visible.</i>				
6a	inchoative	abstract	اعتماد ها سست ...	e'temad-ha	sost	...	shod	/shod-æn
				trust-PL	weak	...	became.3SG	/became-3PL
				the trusts ... weak.				
				<i>the trusts were weaken.</i>				
6b	inchoative	concrete	پایه ها سست ...	paye-ha	sost	...	shod	/shod-æn
				pillar-PL	weak	...	became.3SG	/became-3PL
				the pillars ... weak.				
				<i>the pillars were weaken.</i>				
7a	inchoative	abstract	باورها سخت ...	bavær-ha	sæxt	...	shod	/shod-æn
				belief-PL	strong	...	became.3SG	/became-3PL
				the beliefs ... strong.				
				<i>the beliefs became strong.</i>				

Table D-1. Continued

item	structure	condition	preamble	gloss			possible target response	
7b	inchoative	concrete	سیمان ها سخت ...	siman-ha cement-PL the cements ... <i>the cements were set.</i>	sæxt hard/strong hard/strong.	...	shod became.3SG	/shod-æn /became-3PL
8a	inchoative	abstract	دشمنی ها ناپدید ...	doshmæni-ha animosity-PL the animosities ... <i>the animosities were vanished.</i>	napædid invisible invisible.	...	shod became.3SG	/shod-æn /became-3PL
8b	inchoative	concrete	علامت ها ناپدید ...	ælamæt-ha sign-PL the signs ... <i>the signs were vanished.</i>	napædid invisible invisible.	...	shod became.3SG	/shod-æn /became-3PL
9a	inchoative	abstract	مهربانی ها نمایان ...	mehræbani-ha kindness-PL the kindnesses ... <i>the kindnesses became visible.</i>	næmayan visible visible.	...	shod became.3SG	/shod-æn /became-3PL
9b	inchoative	concrete	رود ها نمایان ...	rud-ha river-PL the rivers <i>the rivers became visible.</i>	næmayan visible visible.	...	shod became.3SG	/shod-æn /became-3PL
10a	inchoative	abstract	دلسوزی ها زیاد ...	delsuzi-ha sympathy-PL the sympathies ... <i>the sympathies increased.</i>	ziyad more more.	...	shod became.3SG	/shod-æn /became-3PL
10b	inchoative	concrete	قایق ها زیاد ...	qayeq-ha boat-PL the boats ... <i>the boats increased.</i>	ziyad more more.	...	shod became.3SG	/shod-æn /became-3PL

Table D-1. Continued

item	structure	condition	preamble	gloss			possible target response	
11a	inchoative	abstract	بودجه ها تمام ...	budje-ha	tæmam	...	shod	/shod-æn
				budget-PL	end	...	became.3SG	/became-3PL
				the budgets ... running out				
				<i>the budgets ran out.</i>				
11b	inchoative	concrete	شکلات ها تمام ...	shokolat-ha	tæmam	...	shod	/shod-æn
				chocolate-PL	end	...	became.3SG	/became-3PL
				the chocolates ... running out				
				<i>the chocolates ran out.</i>				
12a	inchoative	abstract	دردسر ها پیدا ...	dærdesær-ha	peida	...	shod	/shod-æn
				headache-PL	visible	...	became.3SG	/became-3PL
				the headaches ... visible.				
				<i>the headaches were appeared.</i>				
12b	inchoative	concrete	کلید ها پیدا ...	kelid-ha	peida	...	shod	/shod-æn
				key-PL	visible	...	became.3SG	/became-3PL
				the keys ... visible.				
				<i>the keys were appeared/found.</i>				
13a	passive	abstract	امتیازها فروخته ...	emtiyaz-ha	foruxt-e	...	shod	/shod-æn
				concession-PL	sold-pp	...	became.3SG	/became-3PL
				the concessions ... sold.				
				<i>the concessions were sold.</i>				
13b	passive	concrete	کامیون ها فروخته ...	kamyun-ha	foruxt-e	...	shod	/shod-æn
				truck-PL	sold-pp	...	became.3SG	/became-3PL
				the trucks ... sold.				
				<i>the trucks were sold.</i>				
14a	passive	abstract	سختی ها شمرده ...	sæxti-ha	shomord-e	...	shod	/shod-æn
				difficulty-PL	counted-pp	...	became.3SG	/became-3PL
				the difficulties ... counted.				
				<i>the difficulties were counted.</i>				

Table D-1. Continued

item	structure	condition	preamble	gloss			possible target response	
14b	passive	concrete	خودکارها شمرده ...	xodkar-ha pen-PL the pens ... counted. <i>the pens were counted.</i>	shomord-e ... counted-pp ...	...	shod /shod-æn became.3SG /became-3PL
15a	passive	abstract	زیبایی ها دیده ...	ziba'i-ha beauty-PL the beauties ... seen. <i>the beauties were seen.</i>	did-e ... saw-pp ...	...	shod /shod-æn became.3SG /became-3PL
15b	passive	concrete	هواپیماها دیده ...	havapeima-ha plane-PL the planes ... seen. <i>the planes were seen.</i>	did-e ... saw-pp ...	...	shod /shod-æn became.3SG /became-3PL
16a	passive	abstract	کمک ها فرستاده ...	komæk-ha assistance-PL the assistances ... sent. <i>the assistances were sent.</i>	ferestad-e ... sent-pp ...	...	shod /shod-æn became.3SG /became-3PL
16b	passive	concrete	تشک ها فرستاده ...	toshæk-ha mattress-PL the mattresses ... sent. <i>the mattresses were sent.</i>	ferestad-e ... sent-pp ...	...	shod /shod-æn became.3SG /became-3PL
17a	passive	abstract	هزینه ها پرداخته ...	hæzine-ha expenditure-PL the expenditures ... paid. <i>the expenditures were paid.</i>	pærdaxt-e ... paid-pp ...	...	shod /shod-æn became.3SG /became-3PL
17b	passive	concrete	صورتحساب ها پرداخته ...	suræt hesab-ha bill-PL the bills ... paid. <i>the bills were paid.</i>	pærdaxt-e ... paid-pp ...	...	shod /shod-æn became.3SG /became-3PL

Table D-1. Continued

item	structure	condition	Preamble	gloss	possible target response
18a	passive	abstract	ایده ها نوشته ...	ide-ha nevesht-e ... idea-PL wrote-pp ... the ideas ... written. <i>the ideas were written.</i>	shod /shod-æn became.3SG /became-3PL
18b	passive	concrete	ورقه ها نوشته ...	væræqe-ha nevesht-e ... paper-PL wrote-pp ... the papers ... written. <i>the papers were written.</i>	shod /shod-æn became.3SG /became-3PL
19a	passive	abstract	امید ها داده ...	omid-ha dad-e ... hope-PL gave-pp ... the hopes ... given. <i>the hopes were given.</i>	shod /shod-æn became.3SG /became-3PL
19b	passive	concrete	کامپیوتر ها داده ...	kamputer-ha dad-e ... computer-PL gave-pp ... the computers ... given. <i>the computers were given.</i>	shod /shod-æn became.3SG /became-3PL
20a	passive	abstract	فکر ها پذیرفته ...	fekr-ha pæziroft-e ... thought-PL accepted-pp ... the thoughts ... accepted. <i>the thoughts were accepted.</i>	shod /shod-æn became.3SG /became-3PL
20b	passive	concrete	کیف ها پذیرفته ...	kif-ha pæziroft-e ... bag-PL accepted-pp ... the bags ... accepted. <i>the bags were accepted.</i>	shod /shod-æn became.3SG /became-3PL

Table D-1. Continued

item	structure	condition	preamble	gloss			possible target response	
21a	passive	abstract	رفتارها پسندیده ...	ræftar-ha	pæsændid-e approved-pp	... ... ... approved.	shod	/shod-æn
				behavior-PL		... approved.	became.3SG	/became-3PL
				the behaviors		<i>the behaviors were approved.</i>		
21b	passive	concrete	لباسها پسندیده ...	lebas-ha	pæsændid-e approved-pp	... ... ... approved.	shod	/shod-æn
				clothe-PL		... approved.	became.3SG	/became-3PL
				the clothes		<i>the clothes were approved/liked.</i>		
22a	passive	abstract	فرهنگها شناخته ...	fæhæng-ha	shenaxt-e knew-pp	... ... ... known	shod	/shod-æn
				culture-PL		... known	became.3SG	/became-3PL
				the cultures		<i>the cultures were known.</i>		
22b	passive	concrete	سرزمینها شناخته ...	særzæmin-ha	shenaxt-e knew-pp	... ... ... known.	shod	/shod-æn
				land-PL		... known.	became.3SG	/became-3PL
				the lands		<i>the lands ... known</i>		
23a	passive	abstract	پیمانها شکسته ...	peiman-ha	shekæst-e broke-pp	... ... ... broken	shod	/shod-æn
				agreement-PL		... broken	became.3SG	/became-3PL
				the agreements		<i>the agreements were broken.</i>		
23b	passive	concrete	شیشهها شکسته ...	shishe-ha	shekæst-e broke-pp	... ... ... broken	shod	/shod-æn
				glass-PL		... broken	became.3SG	/became-3PL
				the glasses		<i>the glasses were broken.</i>		

Table D-1. Continued

item	structure	condition	preamble	gloss			possible target response	
24a	passive	abstract	طرح ها خوانده ...	tærh-ha	xand-e	...	shod	/shod-æn
				plan-PL	studied-pp	...	became.3SG	/became-3PL
				the plans ... studied.				
				<i>the plans were studied.</i>				
24b	passive	concrete	کتاب ها خوانده ...	ketab-ha	xand-e	...	shod	/shod-æn
				book-PL	studied-pp	...	became.3SG	/became-3PL
				the books ... studied.				
				<i>the books were studied.</i>				

APPENDIX E
GLOSS- ATTRACTION EXPERIMENT

Table E-1. List of the stimuli for Attraction experiment

item	animacy	NO	Preamble	gloss				possible target response	
1a	Ani	pl-an	تاکسی ها کودکان رو جابجا ...	taksi-ha	kudæk-an	ro	jabeja ...	kærd	/kærd-æn
				taxi-pl	child-pl	OM	moving ...	did.3SG	/did-3PL
				the taxies moving ... the children'					
				<i>the taxies transported the children.</i>					
1b	Ani	pl-ha	تاکسی ها کودک ها رو جابجا ...	taksi-ha	kudæk-ha	ro	jabeja ...	kærd	/kærd-æn
				taxi-pl	child-pl	OM	moving ...	did.3SG	/did-3PL
				the taxies moving ... the children'					
				<i>the taxies transported the children.</i>					
1c	Ani	Sg	تاکسی ها کودک رو جابجا ...	taksi-ha	kudæk	ro	jabeja ...	kærd	/kærd-æn
				taxi-pl	child	OM	moving ...	did.3SG	/did-3PL
				the taxies moving ... the child'					
				<i>the taxies transported the child.</i>					
1d	inani	pl-ha	تاکسی ها جعبه ها رو جابجا ...	taksi-ha	jæbe-ha	ro	jabeja ...	kærd	/kærd-æn
				taxi-pl	box-pl	OM	moving ...	did.3SG	/did-3PL
				the taxies moving ... the boxes'					
				<i>the taxies transported the boxes.</i>					
1e	inani	sg	تاکسی ها جعبه رو جابجا ...	taksi-ha	Jæbe	ro	jabeja ...	kærd	/kærd-æn
				taxi-pl	Box	OM	moving ...	did.3SG	/did-3PL
				the taxies moving ... the box'					
				<i>the taxies transported the box.</i>					

Table E-1. Continued

item	animacy	NO	Preamble	gloss	possible target response
2a	ani	pl-an	آمبولانس ها مجروحان رو جا ...	ambulans-ha mæjruh-an ro ja ... ambulance-pl injured-pl OM place ... the ambulances giving place ... the injured people' <i>the ambulances made a place for the injured people.</i>	dad /dad-æn gave.3SG /gave-3PL
2b	ani	pl-ha	آمبولانس ها مجروح ها رو جا ...	ambulans-ha mæjruh-ha ro ja ... ambulance-pl injured-pl OM place ... the ambulances giving place ... the injured people' <i>the ambulances made a place for the injured people.</i>	dad /dad-æn gave.3SG /gave-3PL
2c	ani	sg	آمبولانس ها مجروح رو جا ...	ambulans-ha Mæjruh ro ja ... ambulance-pl Injured OM place ... the ambulances giving place ... the injured' <i>the ambulances made a place for the injured.</i>	dad /dad-æn gave.3SG /gave-3PL
2d	inani	pl-ha	آمبولانس ها ملافه ها رو جا ...	ambulans-ha mælafe-ha ro ja ... ambulance-pl sheet-pl OM place ... the ambulances giving place ... the sheets' <i>the ambulances made a place for the sheets.</i>	dad /dad-æn gave.3SG /gave-3PL
2e	inani	sg	آمبولانس ها ملافه رو جا ...	ambulans-ha Mælafe ro ja ... ambulance-pl Sheet OM place ... the ambulances giving place ... the sheet' <i>the ambulances made a place for the sheet.</i>	dad /dad-æn gave.3SG /gave-3PL

Table E-1. Continued

item	animacy	NO	Preamble	gloss				possible target response	
3a	ani	pl-an	قلاب ها شتران رو عقب ...	qolab-ha	shotor-an	ro	æqæb ...	keshid	/keshid-æn
				grapnel-pl	camel-pl	OM	back ...	pull.3SG	/pull-3PL
				the grapnels pulling ... the camels back'					
				<i>the grapnels pulled the camels back.</i>					
3b	ani	pl-ha	قلاب ها شترها رو عقب ...	qolab-ha	shotor-ha	ro	æqæb ...	keshid	/keshid-æn
				grapnel-pl	camel-pl	OM	back ...	pull.3SG	/pull-3PL
				the grapnels pulling back ... the camels'					
				<i>the grapnels pulled the camels back.</i>					
3c	ani	sg	قلاب ها شتر رو عقب ...	qolab-ha	Shotor	ro	æqæb ...	keshid	/keshid-æn
				grapnel-pl	Camel	OM	back ...	pull.3SG	/pull-3PL
				the grapnels pulling back ... the camel'					
				<i>the grapnels pulled the camel back.</i>					
3d	inani	pl-ha	قلاب ها پرده ها رو عقب ...	qolab-ha	pærde-ha	ro	æqæb ...	keshid	/keshid-æn
				grapnel-pl	curtain-pl	OM	back ...	pull.3SG	/pull-3PL
				the grapnels pulling back ... the curtains'					
				<i>the grapnels pulled the curtains back.</i>					
3e	inani	sg	قلاب ها پرده رو عقب ...	qolab-ha	Pærde	ro	æqæb ...	keshid	/keshid-æn
				grapnel-pl	Curtain	OM	back ...	pull.3SG	/pull-3PL
				the grapnels pulling back ... the curtain'					
				<i>the grapnels pulled the curtain back.</i>					

Table E-1. Continued

item	animacy	NO	Preamble	gloss				possible target response	
4a	ani	pl-an	فنها بازیکنان رو پرتاب ...	fænær-ha spring-pl the springs	bazikon-an player-pl the players'	ro OM	pærtab ... throwing ...	kærd did.3SG	/kærd-æn /did-3PL
				<i>the springs threw the players.</i>					
4b	ani	pl-ha	فنها بازیکنان ها رو پرتاب ...	fænær-ha spring-pl the springs	bazikon-ha player-pl the players'	ro OM	pærtab ... throwing ...	kærd did.3SG	/kærd-æn /did-3PL
				<i>the springs threw the players.</i>					
4c	ani	sg	فنها بازیکن رو پرتاب ...	fænær-ha spring-pl the springs	Bazikon Player the player'	ro OM	pærtab ... throwing ...	kærd did.3SG	/kærd-æn /did-3PL
				<i>the springs threw the player.</i>					
4d	inani	pl-ha	فنها توپ ها رو پرتاب ...	fænær-ha spring-pl the springs	tup-ha ball-pl the balls'	ro OM	pærtab ... throwing ...	kærd did.3SG	/kærd-æn /did-3PL
				<i>the springs threw the balls.</i>					
4e	inani	sg	فنها توپ رو پرتاب ...	fænær-ha spring-pl the springs	tup ball the ball'	ro OM	pærtab ... throwing ...	kærd did.3SG	/kærd-æn /did-3PL
				<i>the springs threw the ball.</i>					

Table E-1. Continued

item	animacy	NO	Preamble	gloss				possible target response	
5a	ani	pl-an	آبپاش ها رهگذران رو خیس ...	abpash-ha	ræhgozær-an	ro	xis ...	kærd	/kærd-æn
				sprinkler-pl	passerby-pl	OM	wet ...	did.3SG	/did-3PL
				the sprinklers wetting ... the passers-by'					
				<i>the sprinklers made the passers-by wet.</i>					
5b	ani	pl-ha	آبپاش ها رهگذرها رو خیس ...	abpash-ha	ræhgozær-ha	ro	xis ...	kærd	/kærd-æn
				sprinkler-pl	passerby-pl	OM	wet ...	did.3SG	/did-3PL
				the sprinklers wetting ... the passers-by'					
				<i>the sprinklers made the passers-by wet.</i>					
5c	ani	sg	آبپاش ها رهگذر رو خیس ...	abpash-ha	ræhgozær	ro	xis ...	kærd	/kærd-æn
				sprinkler-pl	passerby	OM	wet ...	did.3SG	/did-3PL
				the sprinklers wetting ... the passer-by'					
				<i>the sprinklers made the passer-by wet.</i>					
5d	inani	pl-ha	آبپاش ها دوچرخه ها رو خیس ...	abpash-ha	dochærxe-ha	ro	xis ...	kærd	/kærd-æn
				sprinkler-pl	bicycle-pl	OM	wet ...	did.3SG	/did-3PL
				the sprinklers wetting ... the bicycles'					
				<i>the sprinklers made the bicycles wet.</i>					
5e	inani	sg	آبپاش ها دوچرخه رو خیس ...	abpash-ha	dochærxe	ro	xis ...	kærd	/kærd-æn
				sprinkler-pl	bicycle	OM	wet ...	did.3SG	/did-3PL
				the sprinklers wetting ... the bicycle'					
				<i>the sprinklers made the bicycle wet.</i>					

Table E-1. Continued

item	animacy	NO	Preamble	gloss				possible target response	
6a	ani	pl-an	عکس ها روستائیان رو نشون ...	æks-ha	rusta'i-yan	ro	neshun ...	dad	/dad-æn
				photo-pl	villager-pl	OM	showing ...	gave.3SG	/gave-3PL
				'the photos showing ... the villagers'					
				<i>the photos showed the villagers.</i>					
6b	ani	pl-ha	عکس ها روستائی ها رو نشون ...	æks-ha	rusta'i-ha	ro	neshun ...	dad	/dad-æn
				photo-pl	villager-pl	OM	showing ...	gave.3SG	/gave-3PL
				'the photos showing ... the villagers'					
				<i>the photos showed the villagers.</i>					
6c	ani	sg	عکس ها روستائی رو نشون ...	æks-ha	rusta'i	ro	neshun ...	dad	/dad-æn
				photo-pl	villager	OM	showing ...	gave.3SG	/gave-3PL
				'the photos showing ... the villager'					
				<i>the photos showed the villager.</i>					
6d	inani	pl-ha	عکس ها آینه ها رو نشون ...	æks-ha	ayene-ha	ro	neshun ...	dad	/dad-æn
				photo-pl	mirror-pl	OM	showing ...	gave.3SG	/gave-3PL
				'the photos showing ... the mirrors'					
				<i>the photos showed the mirrors.</i>					
6e	inani	sg	عکس ها آینه رو نشون ...	æks-ha	ayene	ro	neshun ...	dad	/dad-æn
				photo-pl	mirror	OM	showing ...	gave.3SG	/gave-3PL
				'the photos showing ... the mirror'					
				<i>the photos showed the mirrors.</i>					

Table E-1. Continued

item	animacy	NO	Preamble	gloss				possible target response	
7a	ani	pl-an	مجله ها دوندگان رو معرفی ...	mæjæle-ha magazine-pl	dævænde-gan runner-pl	ro OM	mo'ærefi ... introducing ...	kærd did.3SG	/kærd-æn /did-3PL
				the magazines introducing ... the runners' <i>the magazines introduced the runners.</i>					
7b	ani	pl-ha	مجله ها دونده ها رو معرفی ...	mæjæle-ha magazine-pl	dævænde-ha runner-pl	ro OM	mo'ærefi ... introducing ...	kærd did.3SG	/kærd-æn /did-3PL
				the magazines introducing ... the runners' <i>the magazines introduced the runners.</i>					
7c	ani	sg	مجله ها دونده رو معرفی ...	mæjæle-ha magazine-pl	dævænde runner	ro OM	mo'ærefi ... introducing ...	kærd did.3SG	/kærd-æn /did-3PL
				the magazines introducing ... the runner' <i>the magazines introduced the runner.</i>					
7d	inani	pl-ha	مجله ها گوشی ها رو معرفی ...	mæjæle-ha magazine-pl	gushi-ha cell phone-pl	ro OM	mo'ærefi ... introducing ...	kærd did.3SG	/kærd-æn /did-3PL
				the magazines introducing ... the cell-phones' <i>the magazines introduced the cell-phones.</i>					
7e	inani	sg	مجله ها گوشی رو معرفی ...	mæjæle-ha magazine-pl	gushi cell phone	ro OM	mo'ærefi ... introducing ...	kærd did.3SG	/kærd-æn /did-3PL
				the magazines introducing ... the cell-phone' <i>the magazines introduced the cell-phone.</i>					

Table E-1. Continued

item	animacy	NO	Preamble	gloss				possible target response	
8a	ani	pl-an	لیست ها برنده گان رو اعلام ...	list-ha	bærænde-gan	ro	e'lam ...	kærd	/kærd-æn
				list-pl	winner-pl	OM	announcing ...	did.3SG	/did-3PL
				the lists announcing ... the winners'					
				<i>the lists announced the winners.</i>					
8b	ani	pl-ha	لیست ها برنده ها رو اعلام ...	list-ha	bærænde-ha	ro	e'lam ...	kærd	/kærd-æn
				list-pl	winner-pl	OM	announcing ...	did.3SG	/did-3PL
				the lists announcing ... the winners'					
				<i>the lists announced the winners.</i>					
8c	ani	sg	لیست ها برنده رو اعلام ...	list-ha	bærænde	ro	e'lam ...	kærd	/kærd-æn
				list-pl	winner	OM	announcing ...	did.3SG	/did-3PL
				the lists announcing ... the winner'					
				<i>the lists announced the winner.</i>					
8d	inani	pl-ha	لیست ها جایزه ها رو اعلام ...	list-ha	jayeze-ha	ro	e'lam ...	kærd	/kærd-æn
				list-pl	prize-pl	OM	announcing ...	did.3SG	/did-3PL
				the lists announcing ... the prizes'					
				<i>the lists announced the prizes.</i>					
8e	inani	sg	لیست ها جایزه رو اعلام ...	list-ha	jayeze	ro	e'lam ...	kærd	/kærd-æn
				list-pl	prize	OM	announcing ...	did.3SG	/did-3PL
				the lists announcing ... the prize'					
				<i>the lists announced the prize.</i>					

Table E-1. Continued

item	animacy	NO	Preamble	gloss				possible target response	
9a	ani	pl-an	زنجیرها گوسفندان رو نگه ...	zænjir-ha chain-pl 'the chains holding ... the sheep ' <i>the chains held the sheep.</i>	gusfænd-an sheep-pl	ro OM	negæh ... holding ...	dasht kept.3SG	/dasht-æn /kept-3PL
9b	ani	pl-ha	زنجیرها گوسفندها رو نگه ...	zænjir-ha chain-pl 'the chains holding ... the sheep ' <i>the chains held the sheep.</i>	gusfænd-ha sheep-pl	ro OM	negæh ... holding ...	dasht kept.3SG	/dasht-æn /kept-3PL
9c	ani	sg	زنجیرها گوسفند رو نگه ...	zænjir-ha chain-pl 'the chains holding ... the sheep ' <i>the chains held the sheep.</i>	gusfænd sheep	ro OM	negæh ... holding ...	dasht kept.3SG	/dasht-æn /kept-3PL
9d	inani	pl-ha	زنجیرها گاری ها رو نگه ...	zænjir-ha chain-pl 'the chains holding ... the carts ' <i>the chains held the carts.</i>	gari-ha cart-pl	ro OM	negæh ... holding ...	dasht kept.3SG	/dasht-æn /kept-3PL
9e	inani	sg	زنجیرها گاری رو نگه ...	zænjir-ha chain-pl 'the chains holding ... the cart ' <i>the chains held the cart.</i>	gari cart	ro OM	negæh ... holding ...	dasht kept.3SG	/dasht-æn /kept-3PL

Table E-1. Continued

item	animacy	NO	Preamble	gloss				possible target response	
10a	ani	pl-an	کولرها مسافران رو خنک ...	kuler-ha cooler-pl the air conditioners cooling ... <i>the air conditioners cooled the passengers.</i>	mosafer-an passenger-pl the passengers'	ro OM	xonæk ... cold ...	kærd did.3SG	/kærd-æn /did-3PL
10b	ani	pl-ha	کولرها مسافرها رو خنک ...	kuler-ha cooler-pl the air conditioners cooling ... <i>the air conditioners cooled the passengers.</i>	mosafer-ha passenger-pl the passengers'	ro OM	xonæk ... cold ...	kærd did.3SG	/kærd-æn /did-3PL
10c	ani	sg	کولرها مسافر رو خنک ...	kuler-ha cooler-pl the air conditioners cooling ... <i>the air conditioners cooled the passenger.</i>	mosafer passenger the passenger'	ro OM	xonæk ... cold ...	kærd did.3SG	/kærd-æn /did-3PL
10d	inani	pl-ha	کولرها اتاق ها رو خنک ...	kuler-ha cooler-pl the air conditioners cooling ... <i>the air conditioners cooled the rooms.</i>	otaq-ha room-pl the rooms'	ro OM	xonæk ... cold ...	kærd did.3SG	/kærd-æn /did-3PL
10e	inani	sg	کولرها اتاق رو خنک ...	kuler-ha cooler-pl the air conditioners cooling ... <i>the air conditioners cooled the room.</i>	otaq room the room'	ro OM	xonæk ... cold ...	kærd did.3SG	/kærd-æn /did-3PL

Table E-1. Continued

item	animacy	NO	Preamble	gloss				possible target response	
11a	ani	pl-an	واگن ها اسبان رو حمل ...	vagon-ha wagon-pl the wagons carrying ... <i>the wagons carried the horses.</i>	æsb-an horse-pl	ro OM	hæml ... carrying	kærd did.3SG	/kærd-æn /did-3PL
11b	ani	pl-ha	واگن ها اسب ها رو حمل ...	vagon-ha wagon-pl the wagons carrying ... <i>the wagons carried the horses.</i>	æsb-ha horse-pl	ro OM	hæml ... carrying	kærd did.3SG	/kærd-æn /did-3PL
11c	ani	sg	واگن ها اسب رو حمل ...	vagon-ha wagon-pl the wagons carrying ... <i>the wagons carried the horse.</i>	æsb horse-pl	ro OM	hæml ... carrying	kærd did.3SG	/kærd-æn /did-3PL
11d	inani	pl-ha	واگن ها مجسمه ها رو حمل ...	vagon-ha wagon-pl the wagons carrying ... <i>the wagons carried the statues.</i>	mojaseme-ha statue-pl	ro OM	hæml ... carrying	kærd did.3SG	/kærd-æn /did-3PL
11e	inani	sg	واگن ها مجسمه رو حمل ...	vagon-ha wagon-pl the wagons carrying ... <i>the wagons carried the statue.</i>	mojaseme statue	ro OM	hæml ... carrying	kærd did.3SG	/kærd-æn /did-3PL

Table E-1. Continued

item	animacy	NO	Preamble	gloss				possible target response	
12a	ani	pl-an	بخاری ها شناگران رو خشک ...	boxari-ha heater-pl the heaters drying ... <i>the heaters dried the swimmers'</i> <i>the heaters dried the swimmers.</i>	shenagær-an swimmer-pl the swimmers' <i>the swimmers.</i>	ro OM	xoshk ... dry ...	kærd did.3SG	/kærd-æn /did-3PL
12b	ani	pl-ha	بخاری ها شناگرها رو خشک ...	boxari-ha heater-pl the heaters drying ... <i>the heaters dried the swimmers.</i>	shenagær-ha swimmer-pl the swimmers' <i>the swimmers.</i>	ro OM	xoshk ... dry ...	kærd did.3SG	/kærd-æn /did-3PL
12c	ani	sg	بخاری ها شناگر رو خشک ...	boxari-ha heater-pl the heaters drying ... <i>the heaters dried the swimmer.</i>	shenagær swimmer the swimmer' <i>the swimmer.</i>	ro OM	xoshk ... dry ...	kærd did.3SG	/kærd-æn /did-3PL
12d	inani	pl-ha	بخاری ها قالیچه ها رو خشک ...	boxari-ha heater-pl the heaters drying ... <i>the heaters dried the rugs.</i>	qaliche-ha rug-pl the rugs' <i>the rugs.</i>	ro OM	xoshk ... dry ...	kærd did.3SG	/kærd-æn /did-3PL
12e	inani	sg	بخاری ها قالیچه رو خشک ...	boxari-ha heater-pl the heaters drying ... <i>the heaters dried the rug.</i>	qaliche rug the rug' <i>the rug.</i>	ro OM	xoshk ... dry ...	kærd did.3SG	/kærd-æn /did-3PL

Table E-1. Continued

item	animacy	NO	Preamble	gloss			possible target response	
13a	ani	pl-an	دستگاهها مریضان رو چک ...	dæstgah-ha instrument-pl the instruments	mæriz-an patient-pl the patients'	ro OM checking ...	chek ... checking ...	kærd /kærd-æn did.3SG /did-3PL
13b	ani	pl-ha	دستگاهها مریض ها رو چک ...	dæstgah-ha instrument-pl the instruments	mæriz-ha patient-pl the patients'	ro OM checking ...	chek ... checking ...	kærd /kærd-æn did.3SG /did-3PL
13c	ani	sg	دستگاهها مریض رو چک ...	dæstgah-ha instrument-pl the instruments	Mæriz Patient the patient'	ro OM checking ...	chek ... checking ...	kærd /kærd-æn did.3SG /did-3PL
13d	inani	pl-ha	دستگاهها نمونه ها رو چک ...	dæstgah-ha instrument-pl the instruments	anemone-ha sample-p the samples'	ro OM checking ...	chek ... checking ...	kærd /kærd-æn did.3SG /did-3PL
13e	inani	sg	دستگاهها نمونه رو چک ...	dæstgah-ha instrument-pl the instruments	Nemune Sample the sample'	ro OM checking ...	chek ... checking ...	kærd /kærd-æn did.3SG /did-3PL

Table E-1. Continued

item	animacy	NO	Preamble	gloss				possible target response	
14a	ani	pl-an	تفنگ ها آهوان رو هدف ...	tofæng-ha gun-pl	ahu-wan deer-pl	ro OM	hædæf ... aiming ...	gereft took.3SG	/gereft-æn /took-3PL
				'the guns aiming ... the deer' <i>the guns aimed the deer.</i>					
14b	ani	pl-ha	تفنگ ها آهوها رو هدف ...	tofæng-ha gun-pl	ahu-ha deer-pl	ro OM	hædæf ... aiming ...	gereft took.3SG	/gereft-æn /took-3PL
				'the guns aiming ... the deer' <i>the guns aimed the deer.</i>					
14c	ani	sg	تفنگ ها آهو رو هدف ...	tofæng-ha gun-pl	Ahu deer	ro OM	hædæf ... aiming ...	gereft took.3SG	/gereft-æn /took-3PL
				'the guns aiming ... the deer' <i>the guns aimed the deer.</i>					
14d	inani	pl-ha	تفنگ ها بالون ها رو هدف ...	tofæng-ha gun-pl	balon-ha hot air balloon-pl	ro OM	hædæf ... aiming ...	gereft took.3SG	/gereft-æn /took-3PL
				'the guns aiming ... the hot air balloons' <i>the guns aimed the hot air balloons.</i>					
14e	inani	sg	تفنگ ها بالون رو هدف ...	tofæng-ha gun-pl	balon hot air balloon	ro OM	hædæf ... aiming ...	gereft took.3SG	/gereft-æn /took-3PL
				'the guns aiming ... the hot air balloon' <i>the guns aimed the hot air balloon.</i>					

Table E-1. Continued

item	animacy	NO	Preamble	gloss			possible target response	
15a	ani	pl-an	رادارها دشمنان رو شناسایی ...	radar-ha radar-pl the radars identifying ... <i>the radars identified the enemies'</i> <i>the radars identified the enemies.</i>	doshmæn-an enemy-pl	ro OM	shenasa'i ... identifying ...	kærd /kærd-æn did.3SG /did-3PL
15b	ani	pl-ha	رادارها دشمن ها رو شناسایی ...	radar-ha radar-pl the radars identifying ... <i>the radars identified the enemies.</i>	doshmæn-ha enemy-pl	ro OM	shenasa'i ... identifying ...	kærd /kærd-æn did.3SG /did-3PL
15c	ani	sg	رادارها دشمن رو شناسایی ...	radar-ha radar-pl the radars identifying ... <i>the radars identified the enemy.</i>	doshmæn enemy	ro OM	shenasa'i ... identifying ...	kærd /kærd-æn did.3SG /did-3PL
15d	inani	pl-ha	رادارها هواپیماها رو شناسایی ...	radar-ha radar-pl the radars identifying ... <i>the radars identified the planes.</i>	hævapeima-ha plane-pl	ro OM	shenasa'i ... identifying ...	kærd /kærd-æn did.3SG /did-3PL
15e	inani	sg	رادارها هواپیما رو شناسایی ...	radar-ha radar-pl the radars identifying ... <i>the radars identified the plane.</i>	hævapeima plane	ro OM	shenasa'i ... identifying ...	kærd /kærd-æn did.3SG /did-3PL

Table E-1. Continued

item	animacy	NO	Preamble	gloss				possible target response	
16a	ani	pl-an	خط کشی ها دانش آموزان رو جدا ...	xætkeshi-ha line-pl the lines separating ... <i>the lines separated the students'</i>	danesh amuz-an student-pl	ro OM	joda ... separate ...	kærd did.3SG	/kærd-æn /did-3PL
16b	ani	pl-ha	خط کشی ها دانش آموزها رو جدا ...	xætkeshi-ha line-pl the lines separating ... <i>the lines separated the students.</i>	danesh amuz-ha student-pl	ro OM	joda ... separate ...	kærd did.3SG	/kærd-æn /did-3PL
16c	ani	sg	خط کشی ها دانش آموز رو جدا ...	xætkeshi-ha line-pl the lines separating ... <i>the lines separated the student.</i>	danesh amuz student	ro OM	joda ... separate ...	kærd did.3SG	/kærd-æn /did-3PL
16d	inani	pl-ha	خط کشی ها خیابان ها رو جدا ...	xætkeshi-ha line-pl the lines separating ... <i>the lines separated the streets.</i>	xiyaban-ha street-pl	ro OM	joda ... separate ...	kærd did.3SG	/kærd-æn /did-3PL
16e	inani	sg	خط کشی ها خیابان رو جدا ...	xætkeshi-ha line-pl the lines separating ... <i>the lines separated the street.</i>	xiyaban street	ro OM	joda ... separate ...	kærd did.3SG	/kærd-æn /did-3PL

Table E-1. Continued

item	animacy	NO	Preamble	gloss				possible target response	
17a	ani	pl-an	غلطک ها فضانوردان رو تکان ...	qæltæk-ha roller-pl 'the rollers shaking ... the astronauts' <i>the rollers shook the astronauts.</i>	fæzanæværd-an astronaut-pl	ro OM	tekan ... shaking ...	dad gave.3SG	/dad-æn /gave-3PL
17b	ani	pl-ha	غلطک ها فضانورد ها رو تکان ...	qæltæk-ha roller-pl 'the rollers shaking ... the astronauts' <i>the rollers shook the astronauts.</i>	fæzanæværd-ha astronaut-pl	ro OM	tekan ... shaking ...	dad gave.3SG	/dad-æn /gave-3PL
17c	ani	sg	غلطک ها فضانورد رو تکان ...	qæltæk-ha roller-pl 'the rollers shaking ... the astronaut' <i>the rollers shook the astronaut.</i>	fæzanæværd astronaut	ro OM	tekan ... shaking ...	dad gave.3SG	/dad-æn /gave-3PL
17d	inani	pl-ha	غلطک ها پرتقال ها رو تکان ...	qæltæk-ha roller-pl 'the rollers shaking ... the oranges' <i>the rollers shook the oranges.</i>	porteqal-ha orange-pl	ro OM	tekan ... shaking ...	dad gave.3SG	/dad-æn /gave-3PL
17e	inani	sg	غلطک ها پرتقال رو تکان ...	qæltæk-ha roller-pl 'the rollers shaking ... the orange' <i>the rollers shook the orange.</i>	porteqal orange	ro OM	tekan ... shaking ...	dad gave.3SG	/dad-æn /gave-3PL

Table E-1. Continued

item	animacy	NO	Preamble	gloss				possible target response	
18a	ani	pl-an	قایق ها نهنگان رو تعقیب ...	qayeq-ha boat-pl the boats chasing ... <i>the boats chased the whales.</i>	næhæng-an whale-pl the whales'	ro OM	tæqib ... chasing ...	kærd did.3SG	/kærd-æn /did-3PL
18b	ani	pl-ha	قایق ها نهنگ ها رو تعقیب ...	qayeq-ha boat-pl the boats chasing ... <i>the boats chased the whales.</i>	næhæng-ha whale-pl the whales'	ro OM	tæqib ... chasing ...	kærd did.3SG	/kærd-æn /did-3PL
18c	ani	sg	قایق ها نهنگ رو تعقیب ...	qayeq-ha boat-pl the boats chasing ... <i>the boats chased the whale.</i>	næhæng whale-pl the whale'	ro OM	tæqib ... chasing ...	kærd did.3SG	/kærd-æn /did-3PL
18d	inani	pl-ha	قایق ها کشتی ها رو تعقیب ...	qayeq-ha boat-pl the boats chasing ... <i>the boats chased the ships.</i>	keshti-ha ship-pl the ships'	ro OM	tæqib ... chasing ...	kærd did.3SG	/kærd-æn /did-3PL
18e	inani	sg	قایق ها کشتی رو تعقیب ...	qayeq-ha boat-pl the boats chasing ... <i>the boats chased the ship.</i>	keshti ship-pl the ship'	ro OM	tæqib ... chasing ...	kærd did.3SG	/kærd-æn /did-3PL

Table E-1. Continued

item	animacy	NO	Preamble	gloss			possible target response	
19a	ani	pl-an	برچسب ها مسافران رو مشخص ...	bærchæsb-ha lable-pl the labels identifying ... <i>the labels identified the passengers.</i>	mosafer-an passenger-pl the passengers'	ro OM	moshæxas ... identified ...	kærd /kærd-æn did.3SG /did-3PL
19b	ani	pl-ha	برچسب ها مسافرها رو مشخص ...	bærchæsb-ha lable-pl the labels identifying ... <i>the labels identified the passengers.</i>	mosafer-ha passenger-pl the passengers'	ro OM	moshæxas ... identified ...	kærd /kærd-æn did.3SG /did-3PL
19c	ani	sg	برچسب ها مسافر رو مشخص ...	bærchæsb-ha lable-pl the labels identifying ... <i>the labels identified the passenger.</i>	mosafer passenger the passenger'	ro OM	moshæxas ... identified ...	kærd /kærd-æn did.3SG /did-3PL
19d	inani	pl-ha	برچسب ها کارتن ها رو مشخص ...	bærchæsb-ha lable-pl the labels identifying ... <i>the labels identified the boxes.</i>	karton-ha box-pl the boxes'	ro OM	moshæxas ... identified ...	kærd /kærd-æn did.3SG /did-3PL
19e	inani	sg	برچسب ها کارتن رو مشخص ...	bærchæsb-ha lable-pl the labels identifying ... <i>the labels identified the box.</i>	karton box the box'	ro OM	moshæxas ... identified ...	kærd /kærd-æn did.3SG /did-3PL

Table E-1. Continued

item	animacy	NO	Preamble	gloss				possible target response	
20a	ani	pl-an	نیمکت ها پیرمردان رو رنگی ...	nimkæt-ha seat-pl the seats staining ... <i>the seats made a stain on the old men.</i>	pir-mærd-an old-man-pl the old men'	ro OM	rængi ... colorful ...	kærd did.3SG	/kærd-æn /did-3PL
20b	ani	pl-ha	نیمکت ها پیرمردها رو رنگی ...	nimkæt-ha seat-pl the seats staining ... <i>the seats made a stain on the old men.</i>	pir-mærd-ha old-man-pl the old men'	ro OM	rængi ... colorful ...	kærd did.3SG	/kærd-æn /did-3PL
20c	ani	sg	نیمکت ها پیرمرد رو رنگی ...	nimkæt-ha seat-pl the seats staining ... <i>the seats made a stain on the old man.</i>	pir-mærd old-man the old man'	ro OM	rængi ... colorful ...	kærd did.3SG	/kærd-æn /did-3PL
20d	inani	pl-ha	نیمکت ها لباس ها رو رنگی ...	nimkæt-ha seat-pl the seats staining ... <i>the seats made a stain on the dresses.</i>	lebas-ha dress-pl the dresses'	ro OM	rængi ... colorful ...	kærd did.3SG	/kærd-æn /did-3PL
20e	inani	sg	نیمکت ها لباس رو رنگی ...	nimkæt-ha seat-pl the seats staining ... <i>the seats made a stain on the dress.</i>	lebas dress the dress'	ro OM	rængi ... colorful ...	kærd did.3SG	/kærd-æn /did-3PL

Table E-1. Continued

item	animacy	NO	Preamble	gloss				possible target response	
21a	ani	pl-an	داروها بیماران رو بهبود ...	daru-ha medicine-pl	bimar-an patient-pl	ro OM	behbud ... curing ...	dad gave.3SG	/dad-æn /gave-3PL
				'the medicines curing ... the patients' <i>the medicines cured the patients.</i>					
21b	ani	pl-ha	داروها بیمارها رو بهبود ...	daru-ha medicine-pl	bimar-ha patient-pl	ro OM	behbud ... curing ...	dad gave.3SG	/dad-æn /gave-3PL
				'the medicines curing ... the patients' <i>the medicines cured the patients.</i>					
21c	ani	sg	داروها بیمار رو بهبود ...	daru-ha medicine-pl	bimar patient	ro OM	behbud ... curing ...	dad gave.3SG	/dad-æn /gave-3PL
				'the medicines curing ... the patient' <i>the medicines cured the patient.</i>					
21d	inani	pl-ha	داروها جراحت ها رو بهبود ...	daru-ha medicine-pl	jerahæt-ha injury-pl	ro OM	behbud ... curing ...	dad gave.3SG	/dad-æn /gave-3PL
				'the medicines curing ... the injuries' <i>the medicines cured the injuries.</i>					
21e	inani	sg	داروها جراحت رو بهبود ...	daru-ha medicine-pl	jerahæt injury	ro OM	behbud ... curing ...	dad gave.3SG	/dad-æn /gave-3PL
				'the medicines curing ... the injury' <i>the medicines cured the injury.</i>					

Table E-1. Continued

item	animacy	NO	Preamble	gloss				possible target response	
22a	ani	pl-an	محلول ها جانوران رو آلوده ...	mæhlul-ha liquid-pl the liquids polluting ... <i>the liquids polluted the animals.</i>	janevær-an animal-pl the animals'	ro OM	alude ... polluted ...	kærd did.3SG	/kærd-æn /did-3PL
22b	ani	pl-ha	محلول ها جانورها رو آلوده ...	mæhlul-ha liquid-pl the liquids polluting ... <i>the liquids polluted the animals.</i>	janevær-ha animal-pl the animals'	ro OM	alude ... polluted ...	kærd did.3SG	/kærd-æn /did-3PL
22c	ani	sg	محلول ها جانور رو آلوده ...	mæhlul-ha liquid-pl the liquids polluting ... <i>the liquids polluted the animal.</i>	janevær animal the animal'	ro OM	alude ... polluted ...	kærd did.3SG	/kærd-æn /did-3PL
22d	inani	pl-ha	محلول ها دریاچه ها رو آلوده ...	mæhlul-ha liquid-pl the liquids polluting ... <i>the liquids polluted the lakes.</i>	dæryache-ha lake-pl the lakes'	ro OM	alude ... polluted ...	kærd did.3SG	/kærd-æn /did-3PL
22e	inani	sg	محلول ها دریاچه رو آلوده ...	mæhlul-ha liquid-pl the liquids polluting ... <i>the liquids polluted the lake.</i>	dæryache lake the lake'	ro OM	alude ... polluted ...	kærd did.3SG	/kærd-æn /did-3PL

Table E-1. Continued

item	animacy	NO	Preamble	gloss				possible target response	
23a	ani	pl-an	پمادها زخمیان رو درمان ...	pomad-ha ointment-pl the ointments <i>the ointments healed the wounded people.</i>	zæxmi-yan wounded-pl healing ... the wounded people'	ro OM	dærman ... healing ...	kærd did.3SG	/kærd-æn /did-3PL
23b	ani	pl-ha	پمادها زخمی ها رو درمان ...	pomad-ha ointment-pl the ointments <i>the ointments healed the wounded people.</i>	zæxmi-ha wounded-pl healing ... the wounded people'	ro OM	dærman ... healing ...	kærd did.3SG	/kærd-æn /did-3PL
23c	ani	sg	پمادها زخمی رو درمان ...	pomad-ha ointment-pl the ointments <i>the ointments healed the wounded person.</i>	zæxmi wounded healing ... the wounded person'	ro OM	dærman ... healing ...	kærd did.3SG	/kærd-æn /did-3PL
23d	inani	pl-ha	پمادها زخمها رو درمان ...	pomad-ha ointment-pl the ointments <i>the ointments healed the wounds.</i>	zæxm-ha wound-pl healing ... the wounds'	ro OM	dærman ... healing ...	kærd did.3SG	/kærd-æn /did-3PL
23e	inani	sg	پمادها زخم رو درمان ...	pomad-ha ointment-pl the ointments <i>the ointments healed the wound.</i>	zæxm wound healing ... the wound'	ro OM	dærman ... healing ...	kærd did.3SG	/kærd-æn /did-3PL

Table E-1. Continued

item	animacy	NO	Preamble	gloss				possible target response	
24a	ani	pl-an	تسمه ها کوهنوردان رو نگه ...	tasme-ha	kuhnæværd-an	ro	negæh ...	dasht	/dasht-æn
				belt-pl	mountain climer-pl	OM	holding ...	kept.3SG	/kept-3PL
				'the belts holding ... the mountain climbers'					
				<i>the belts held the mountain climbers.</i>					
24b	ani	pl-ha	تسمه ها کوهنوردها رو نگه ...	tasme-ha	kuhnæværd-ha	ro	negæh ...	dasht	/dasht-æn
				belt-pl	mountain climer-pl	OM	holding ...	kept.3SG	/kept-3PL
				'the belts holding ... the mountain climbers'					
				<i>the belts held the mountain climbers.</i>					
24c	ani	Sg	تسمه ها کوهنورد رو نگه ...	tasme-ha	kuhnæværd	ro	negæh ...	dasht	/dasht-æn
				belt-pl	mountain climer	OM	holding ...	kept.3SG	/kept-3PL
				'the belts holding ... the mountain climber'					
				<i>the belts held the mountain climbers.</i>					
24d	inani	pl-ha	تسمه ها آسانسورها رو نگه ...	tasme-ha	asansor-ha	ro	negæh ...	dasht	/dasht-æn
				belt-pl	elevator-pl	OM	holding ...	kept.3SG	/kept-3PL
				'the belts holding ... the elevators'					
				<i>the belts held the elevators.</i>					
24e	inani	Sg	تسمه ها آسانسور رو نگه ...	tasme-ha	asansor	ro	negæh ...	dasht	/dasht-æn
				belt-pl	elevator	OM	holding ...	kept.3SG	/kept-3PL
				'the belts holding ... the elevator'					
				<i>the belts held the elevator.</i>					

Table E-1. Continued

item	animacy	NO	Preamble	gloss				possible target response	
25a	ani	pl-an	کابینها مشتریان رو جلو ...	kabin-ha cabin-pl	moshtæri-an customer-pl	ro OM	jolo ... forward ...	bord took.3SG	/bord-æn /took-3PL
				'the cabins taking ... the customers forward' <i>the cabins took the customers forward.</i>					
25b	ani	pl-ha	کابینها مشتریها رو جلو ...	kabin-ha cabin-pl	moshtæri-ha customer-pl	ro OM	jolo ... forward ...	bord took.3SG	/bord-æn /took-3PL
				'the cabins taking forward ... the customers' <i>the cabins took the customers forward.</i>					
25c	ani	sg	کابینها مشتری رو جلو ...	kabin-ha cabin-pl	moshtæri customer	ro OM	jolo ... forward ...	bord took.3SG	/bord-æn /took-3PL
				'the cabins taking forward ... the customer' <i>the cabins took the customer forward.</i>					
25d	inani	pl-ha	کابینها وزنه ها رو جلو ...	kabin-ha cabin-pl	væzne-ha weight-pl	ro OM	jolo ... forward ...	bord took.3SG	/bord-æn /took-3PL
				'the cabins taking forward ... the weights' <i>the cabins took the weights forward.</i>					
25e	inani	sg	کابینها وزنه رو جلو ...	kabin-ha cabin-pl	væzne weight	ro OM	jolo ... forward ...	bord took.3SG	/bord-æn /took-3PL
				'the cabins taking forward ... the weight' <i>the cabins took the weight forward.</i>					

Table E-1. Continued

item	animacy	NO	Preamble	gloss				possible target response	
26a	ani	pl-an	اهرم ها گنجشکان رو آزاد ...	æhrom-ha	gonjeshk-an	ro	azad ...	kærd	/kærd-æn
				lever-pl	sparrow-pl	OM	free ...	did.3SG	/did-3PL
				the levers releasing ... the sparrows'					
				<i>the levers released the sparrows.</i>					
26b	ani	pl-ha	اهرم ها گنجشک ها رو آزاد ...	æhrom-ha	gonjeshk-ha	ro	azad ...	kærd	/kærd-æn
				lever-pl	sparrow-pl	OM	free ...	did.3SG	/did-3PL
				the levers releasing ... the sparrows'					
				<i>the levers released the sparrows.</i>					
26c	ani	sg	اهرم ها گنجشک رو آزاد ...	æhrom-ha	gonjeshk	ro	azad ...	kærd	/kærd-æn
				lever-pl	sparrow	OM	free ...	did.3SG	/did-3PL
				the levers releasing ... the sparrow'					
				<i>the levers released the sparrow.</i>					
26d	inani	pl-ha	اهرم ها کیسه ها رو آزاد ...	æhrom-ha	kise-ha	ro	azad ...	kærd	/kærd-æn
				lever-pl	sack-pl	OM	free ...	did.3SG	/did-3PL
				the levers releasing ... the sacks'					
				<i>the levers released the sacks.</i>					
26e	inani	sg	اهرم ها کیسه رو آزاد ...	æhrom-ha	kise	ro	azad ...	kærd	/kærd-æn
				lever-pl	sack	OM	free ...	did.3SG	/did-3PL
				the levers releasing ... the sack'					
				<i>the levers released the sack.</i>					

Table E-1. Continued

item	animacy	NO	Preamble	gloss				possible target response	
27a	ani	pl-an	مینی بوس ها عابران رو له ...	minibus-ha	aber-an	ro	leh ...	kærd	/kærd-æn
				mini-bus-pl	passerby-pl	OM	crushed ...	did.3SG	/did-3PL
				the mini-buses crushing ... the passers-by'					
				<i>the mini-buses crushed the passers-by.</i>					
27b	ani	pl-ha	مینی بوس ها عابرها رو له ...	minibus-ha	aber-ha	ro	leh ...	kærd	/kærd-æn
				mini-bus-pl	passerby-pl	OM	crushed ...	did.3SG	/did-3PL
				the mini-buses crushing ... the passers-by'					
				<i>the mini-buses crushed the passers-by.</i>					
27c	ani	sg	مینی بوس ها عابر رو له ...	minibus-ha	aber	ro	leh ...	kærd	/kærd-æn
				mini-bus-pl	passerby	OM	crushed ...	did.3SG	/did-3PL
				the mini-buses crushing ... the passer-by'					
				<i>the mini-buses crushed the passer-by.</i>					
27d	inani	pl-ha	مینی بوس ها موتورها رو له ...	minibus-ha	motor-ha	ro	leh ...	kærd	/kærd-æn
				mini-bus-pl	motorcycle-pl	OM	crushed ...	did.3SG	/did-3PL
				the mini-buses crushing ... the motorcycles'					
				<i>the mini-buses crushed the motorcycles.</i>					
27e	inani	sg	مینی بوس ها موتور رو له ...	minibus-ha	motor	ro	leh ...	kærd	/kærd-æn
				mini-bus-pl	motorcycle	OM	crushed ...	did.3SG	/did-3PL
				the mini-buses crushing ... the motorcycle'					
				<i>the mini-buses crushed the motorcycle.</i>					

Table E-1. Continued

item	animacy	NO	Preamble	gloss				possible target response	
28a	ani	pl-an	روزنامه ها ورزشکاران رو تایید ...	ruzname-ha newspaper-pl the newspapers <i>the newspapers</i>	værzeshkar-an athlete-pl approving ... the athletes'	ro OM	tæ'id ... approving ...	kærd did.3SG	/kærd-æn /did-3PL
28b	ani	pl-ha	روزنامه ها ورزشکارها رو تایید ...	ruzname-ha newspaper-pl the newspapers <i>the newspapers</i>	værzeshkar-ha athlete-pl approving ... the athletes'	ro OM	tæ'id ... approving ...	kærd did.3SG	/kærd-æn /did-3PL
28c	ani	sg	روزنامه ها ورزشکار رو تایید ...	ruzname-ha newspaper-pl the newspapers <i>the newspapers</i>	værzeshkar athlete approving ... the athlete'	ro OM	tæ'id ... approving ...	kærd did.3SG	/kærd-æn /did-3PL
28d	inani	pl-ha	روزنامه ها سندها رو تایید ...	ruzname-ha newspaper-pl the newspapers <i>the newspapers</i>	sænæd-ha document-pl approving ... the documents'	ro OM	tæ'id ... approving ...	kærd did.3SG	/kærd-æn /did-3PL
28e	inani	sg	روزنامه ها سند رو تایید ...	ruzname-ha newspaper-pl the newspapers <i>the newspapers</i>	sænæd document approving ... the document'	ro OM	tæ'id ... approving ...	kærd did.3SG	/kærd-æn /did-3PL

Table E-1. Continued

item	animacy	NO	Preamble	gloss				possible target response	
29a	ani	pl-an	پتوھا سربازان رو گرم ...	pætu-ha blanket-pl the blankets warming ... <i>the blankets warmed the soldiers.</i>	særbaz-an soldier-pl	ro OM	gærm ... warm ...	kærd did.3SG	/kærd-æn /did-3PL
29b	ani	pl-ha	پتوھا سربازھا رو گرم ...	pætu-ha blanket-pl the blankets warming ... <i>the blankets warmed the soldiers.</i>	særbaz-ha soldier-pl	ro OM	gærm ... warm ...	kærd did.3SG	/kærd-æn /did-3PL
29c	ani	sg	پتوھا سرباز رو گرم ...	pætu-ha blanket-pl the blankets warming ... <i>the blankets warmed the soldier.</i>	særbaz soldier	ro OM	gærm ... warm ...	kærd did.3SG	/kærd-æn /did-3PL
29d	inani	pl-ha	پتوھا تخت خواب ھا رو گرم ...	pætu-ha blanket-pl the blankets warming ... <i>the blankets warmed the beds.</i>	tæxtexab-ha bed-pl	ro OM	gærm ... warm ...	kærd did.3SG	/kærd-æn /did-3PL
29e	inani	sg	پتوھا تخت خواب رو گرم ...	pætu-ha blanket-pl the blankets warming ... <i>the blankets warmed the bed.</i>	tæxtexab bed	ro OM	gærm ... warm ...	kærd did.3SG	/kærd-æn /did-3PL

Table E-1. Continued

item	animacy	NO	Preamble	gloss				possible target response	
30a	ani	pl-an	حوضچه ها اسبان رو ضد عفونی ...	hozche-ha pool-pl the pools disinfecting ... <i>the pools disinfected the horses.</i>	æsb-an horse-pl	ro OM	zede 'ofuni ... disinfecting ...	kærd did.3SG	/kærd-æn /did-3PL
30b	ani	pl-ha	حوضچه ها اسب ها رو ضد عفونی ...	hozche-ha pool-pl the pools disinfecting ... <i>the pools disinfected the horses.</i>	æsb-ha horse-pl	ro OM	zede 'ofuni ... disinfecting ...	kærd did.3SG	/kærd-æn /did-3PL
30c	ani	sg	حوضچه ها اسب رو ضد عفونی ...	hozche-ha pool-pl the pools disinfecting ... <i>the pools disinfected the horse.</i>	æsb horse	ro OM	zede 'ofuni ... disinfecting ...	kærd did.3SG	/kærd-æn /did-3PL
30d	inani	pl-ha	حوضچه ها بشکه ها رو ضد عفونی ...	hozche-ha pool-pl the pools disinfecting ... <i>the pools disinfected the barrels.</i>	boshke-ha barrel-pl	ro OM	zede 'ofuni ... disinfecting ...	kærd did.3SG	/kærd-æn /did-3PL
30e	inani	sg	حوضچه ها بشکه رو ضد عفونی ...	hozche-ha pool-pl the pools disinfecting ... <i>the pools disinfected the barrel.</i>	boshke barrel	ro OM	zede 'ofuni ... disinfecting ...	kærd did.3SG	/kærd-æn /did-3PL

Table E-1. Continued

item	animacy	NO	Preamble	gloss				possible target response	
31a	ani	pl-an	تورها ماهیان رو صید ...	tur-ha net-pl the nets catching ... <i>the nets caught the fishes.</i>	mahi-an fish-pl	ro OM	seyd ... catching ...	kærd did.3SG	/kærd-æn /did-3PL
31b	ani	pl-ha	تورها ماهی ها رو صید ...	tur-ha net-pl the nets catching ... <i>the nets caught the fishes.</i>	mahi-ha fish-pl	ro OM	seyd ... catching ...	kærd did.3SG	/kærd-æn /did-3PL
31c	ani	sg	تورها ماهی رو صید ...	tur-ha net-pl the nets catching ... <i>the nets caught the fish.</i>	mahi fish	ro OM	seyd ... catching ...	kærd did.3SG	/kærd-æn /did-3PL
31d	inani	pl-ha	رو صید تورها مروارید ها ...	tur-ha net-pl the nets catching ... <i>the nets caught the pearls.</i>	morvarid-ha pearl-pl	ro OM	seyd ... catching ...	kærd did.3SG	/kærd-æn /did-3PL
31e	inani	sg	تورها مروارید رو صید ...	tur-ha net-pl the nets catching ... <i>the nets caught the pearl.</i>	morvarid pearl	ro OM	seyd ... catching ...	kærd did.3SG	/kærd-æn /did-3PL

Table E-1. Continued

item	animacy	NO	Preamble	gloss				possible target response	
32a	ani	pl-an	آزمون ها داوطلبان رو امتحان ...	azmun-ha exam-pl	davtælæb-an applicant-pl	ro OM	emtehan ... test ...	kærd did.3SG	/kærd-æn /did-3PL
				the exams testing ... the applicants' <i>the exams tested the applicants.</i>					
32b	ani	pl-ha	آزمون ها داوطلب ها رو امتحان ...	azmun-ha exam-pl	davtælæb-ha applicant-pl	ro OM	emtehan ... test ...	kærd did.3SG	/kærd-æn /did-3PL
				the exams testing ... the applicants' <i>the exams tested the applicants.</i>					
32c	ani	sg	آزمون ها داوطلب رو امتحان ...	azmun-ha exam-pl	davtælæb applicant	ro OM	emtehan ... test ...	kærd did.3SG	/kærd-æn /did-3PL
				the exams testing ... the applicant' <i>the exams tested the applicant.</i>					
32d	inani	pl-ha	آزمون ها دستگاهها رو امتحان ...	azmun-ha exam-pl	dæstgah-ha machine-pl	ro OM	emtehan ... test ...	kærd did.3SG	/kærd-æn /did-3PL
				the exams testing ... the machines' <i>the exams tested the machines.</i>					
32e	inani	sg	آزمون ها دستگاه رو امتحان ...	azmun-ha exam-pl	dæstgah machine	ro OM	emtehan ... test ...	kærd did.3SG	/kærd-æn /did-3PL
				the exams testing ... the machine' <i>the exams tested the machine.</i>					

Table E-1. Continued

item	animacy	NO	Preamble	gloss				possible target response	
33a	ani	pl-an	یادداشت ها معلمان رو توصیف ...	yaddasht-ha	moalem-an	ro	towsif ...	kærd	/kærd-æn
				note-pl	teacher-pl	OM	describing ...	did.3SG	/did-3PL
				the notes describing ... the teachers'					
				<i>the notes described the teachers.</i>					
33b	ani	pl-ha	یادداشت ها معلم ها رو توصیف ...	yaddasht-ha	moalem-ha	ro	towsif ...	kærd	/kærd-æn
				note-pl	teacher-pl	OM	describing ...	did.3SG	/did-3PL
				the notes describing ... the teachers'					
				<i>the notes described the teachers.</i>					
33c	ani	sg	یادداشت ها معلم رو توصیف ...	yaddasht-ha	moalem	ro	towsif ...	kærd	/kærd-æn
				note-pl	teacher	OM	describing ...	did.3SG	/did-3PL
				the notes describing ... the teacher'					
				<i>the notes described the teacher.</i>					
33d	inani	pl-ha	یادداشت ها منظره ها رو توصیف ...	yaddasht-ha	mænzære-ha	ro	towsif ...	kærd	/kærd-æn
				note-pl	scene-pl	OM	describing ...	did.3SG	/did-3PL
				the notes describing ... the scenes'					
				<i>the notes described the scenes.</i>					
33e	inani	sg	یادداشت ها منظره رو توصیف ...	yaddasht-ha	mænzære	ro	towsif ...	kærd	/kærd-æn
				note-pl	scene	OM	describing ...	did.3SG	/did-3PL
				the notes describing ... the scene'					
				<i>the notes described the scene.</i>					

Table E-1. Continued

item	animacy	NO	Preamble	gloss	possible target response
34a	ani	pl-an	جرثقیل ها کارگران رو بالا ...	jæresæqil-ha kargær-an crane-pl labor-pl 'the cranes raising ... the labors' <i>the cranes raised the labors.</i>	ro bala ... OM up ... bord /bord-æn took.3SG /took-3PL
34b	ani	pl-ha	جرثقیل ها کارگرها رو بالا ...	jæresæqil-ha kargær-ha crane-pl labor-pl 'the cranes raising ... the labors' <i>the cranes raised the labors.</i>	ro bala ... OM up ... bord /bord-æn took.3SG /took-3PL
34c	ani	sg	جرثقیل ها کارگر رو بالا ...	jæresæqil-ha kargær crane-pl labor 'the cranes raising ... the labor' <i>the cranes raised the labor.</i>	ro bala ... OM up ... bord /bord-æn took.3SG /took-3PL
34d	inani	pl-ha	جرثقیل ها صندوق ها رو بالا ...	jæresæqil-ha sænduq-ha crane-pl box-pl 'the cranes raising ... the boxes' <i>the cranes raised the boxes.</i>	ro bala ... OM up ... bord /bord-æn took.3SG /took-3PL
34e	inani	sg	جرثقیل ها صندوق رو بالا ...	jæresæqil-ha sænduq crane-pl box 'the cranes raising ... the box' <i>the cranes raised the box.</i>	ro bala ... OM up ... bord /bord-æn took.3SG /took-3PL

Table E-1. Continued

item	animacy	NO	Preamble	gloss				possible target response	
35a	ani	pl-an	قفسه ها دزدان رو پنهان ...	qæfæse-ha shelf-pl the shelves	dozd-an thief-pl hiding ... the thieves '	ro OM	penhan ... hiden ...	kærd did.3SG	/kærd-æn /did-3PL
				<i>the shelves hid the thieves.</i>					
35b	ani	pl-ha	قفسه ها دزدها رو پنهان ...	qæfæse-ha shelf-pl the shelves	dozd-ha thief-pl hiding ... the thieves '	ro OM	penhan ... hiden ...	kærd did.3SG	/kærd-æn /did-3PL
				<i>the shelves hid the thieves.</i>					
35c	ani	sg	قفسه ها دزد رو پنهان ...	qæfæse-ha shelf-pl the shelves	dozd thief hiding ... the thief'	ro OM	penhan ... hiden ...	kærd did.3SG	/kærd-æn /did-3PL
				<i>the shelves hid the thief.</i>					
35d	inani	pl-ha	قفسه ها سطل ها رو پنهان ...	qæfæse-ha shelf-pl the shelves	sætl-ha bucket-pl hiding ... the buckets'	ro OM	penhan ... hiden ...	kærd did.3SG	/kærd-æn /did-3PL
				<i>the shelves hid the buckets.</i>					
35e	inani	sg	قفسه ها سطل رو پنهان ...	qæfæse-ha shelf-pl the shelves	sætl bucket hiding ... the bucket'	ro OM	penhan ... hiden ...	kærd did.3SG	/kærd-æn /did-3PL
				<i>the shelves hid the bucket.</i>					

Table E-1. Continued

item	animacy	NO	Preamble	gloss				possible target response	
36a	ani	pl-an	هلی کوپترها گمشده گان رو پیدا ...	helikopter-ha	gomshode-gan	ro	peida ...	kærd	/kærd-æn
				helicopter-pl	lost one-pl	OM	finding ...	did.3SG	/did-3PL
				the helicopters finding ... the lost people'					
				<i>the helicopters found the lost people.</i>					
36b	ani	pl-ha	هلی کوپترها گمشده ها رو پیدا ...	helikopter-ha	gomshode-ha	ro	peida ...	kærd	/kærd-æn
				helicopter-pl	lost one-pl	OM	finding ...	did.3SG	/did-3PL
				the helicopters finding ... the lost people'					
				<i>the helicopters found the lost people.</i>					
36c	ani	sg	هلی کوپترها گمشده رو پیدا ...	helikopter-ha	gomshode	ro	peida ...	kærd	/kærd-æn
				helicopter-pl	lost one	OM	finding ...	did.3SG	/did-3PL
				the helicopters finding ... the lost person'					
				<i>the helicopters found the lost person.</i>					
36d	inani	pl-ha	هلی کوپترها جزیره ها رو پیدا ...	helikopter-ha	jæzire-ha	ro	peida ...	kærd	/kærd-æn
				helicopter-pl	island-pl	OM	finding ...	did.3SG	/did-3PL
				the helicopters finding ... the islands'					
				<i>the helicopters found the islands.</i>					
36e	inani	sg	هلی کوپترها جزیره رو پیدا ...	helikopter-ha	jæzire	ro	peida ...	kærd	/kærd-æn
				helicopter-pl	island	OM	finding ...	did.3SG	/did-3PL
				the helicopters finding ... the island'					
				<i>the helicopters found the island.</i>					

Table E-1. Continued

item	animacy	NO	Preamble	gloss				possible target response	
37a	ani	pl-an	ماشين ها زندانيان رو تحويل ...	mashin-ha car-pl 'the cars delivering ... the prisoners' <i>the cars delivered the prisoners.</i>	zendani-an prisoner-pl	ro OM	tæhvîl ... delivering ...	dad gave.3SG	/dad-æn /gave-3PL
37b	ani	pl-ha	ماشين ها زندانی ها رو تحويل ...	mashin-ha car-pl 'the cars delivering ... the prisoners' <i>the cars delivered the prisoners.</i>	zendani-ha prisoner-pl	ro OM	tæhvîl ... delivering ...	dad gave.3SG	/dad-æn /gave-3PL
37c	ani	sg	ماشين ها زندانی رو تحويل ...	mashin-ha car-pl 'the cars delivering ... the prisoner' <i>the cars delivered the prisoner.</i>	zendani prisoner	ro OM	tæhvîl ... delivering ...	dad gave.3SG	/dad-æn /gave-3PL
37d	inani	pl-ha	ماشين ها بسته ها رو تحويل ...	mashin-ha car-pl 'the cars delivering ... the parcels' <i>the cars delivered the parcels.</i>	bæste-ha parcel-pl	ro OM	tæhvîl ... delivering ...	dad gave.3SG	/dad-æn /gave-3PL
37e	inani	sg	ماشين ها بسته رو تحويل ...	mashin-ha car-pl 'the cars delivering ... the parcel' <i>the cars delivered the parcel.</i>	bæste parcel	ro OM	tæhvîl ... delivering ...	dad gave.3SG	/dad-æn /gave-3PL

Table E-1. Continued

item	animacy	NO	Preamble	gloss				possible target response	
38a	ani	pl-an	ترازوها قهرمانان رو وزن ...	tærazu-ha	qæhræman-an	ro	væzn ...	kærd	/kærd-æn
				scale-pl	champion-pl	OM	weight ...	did.3SG	/did-3PL
				the scales weighing ... the champions'					
				<i>the scales weighed the champions.</i>					
38b	ani	pl-ha	ترازوها قهرمان ها رو وزن ...	tærazu-ha	qæhræman-ha	ro	væzn ...	kærd	/kærd-æn
				scale-pl	champion-pl	OM	weight ...	did.3SG	/did-3PL
				the scales weighing ... the champions'					
				<i>the scales weighed the champions.</i>					
38c	ani	sg	ترازوها قهرمان رو وزن ...	tærazu-ha	qæhræman	ro	væzn ...	kærd	/kærd-æn
				scale-pl	champion	OM	weight ...	did.3SG	/did-3PL
				the scales weighing ... the champion'					
				<i>the scales weighed the champion.</i>					
38d	inani	pl-ha	رو وزن ترازوها هندونه ها ...	tærazu-ha	hendune-ha	ro	væzn ...	kærd	/kærd-æn
				scale-pl	watermelon-pl	OM	weight ...	did.3SG	/did-3PL
				the scales weighing ... the watermelons'					
				<i>the scales weighed the watermelons.</i>					
38e	inani	sg	رو وزن ترازوها هندونه ...	tærazu-ha	hendune	ro	væzn ...	kærd	/kærd-æn
				scale-pl	watermelon	OM	weight ...	did.3SG	/did-3PL
				the scales weighing ... the watermelon'					
				<i>the scales weighed the watermelon.</i>					

Table E-1. Continued

item	animacy	NO	Preamble	gloss				possible target response	
39a	ani	pl-an	تانک ها رزمندگان رو دنبال ...	tank-ha	ræzmænde-gan	ro	donbal ...	kærd	/kærd-æn
				tank-pl	soldier-pl	OM	chasing ...	did.3SG	/did-3PL
				the tanks chasing ... the soldiers '					
				<i>the tanks chased the soldiers .</i>					
39b	ani	pl-ha	تانک ها رزمنده ها رو دنبال ...	tank-ha	ræzmænde-ha	ro	donbal ...	kærd	/kærd-æn
				tank-pl	soldier-pl	OM	chasing ...	did.3SG	/did-3PL
				the tanks chasing ... the soldiers '					
				<i>the tanks chased the soldiers.</i>					
39c	ani	sg	تانک ها رزمنده رو دنبال ...	tank-ha	ræzmænde	ro	donbal ...	kærd	/kærd-æn
				tank-pl	soldier	OM	chasing ...	did.3SG	/did-3PL
				the tanks chasing ... the soldier '					
				<i>the tanks chased the soldier.</i>					
39d	inani	pl-ha	تانک ها رد پاها رو دنبال ...	tank-ha	ræd e pa-ha	ro	donbal ...	kærd	/kærd-æn
				tank-pl	track-pl	OM	chasing ...	did.3SG	/did-3PL
				the tanks chasing ... the tracks '					
				<i>the tanks chased the tracks.</i>					
39e	inani	sg	تانک ها رد پا رو دنبال ...	tank-ha	ræd e pa	ro	donbal ...	kærd	/kærd-æn
				tank-pl	track	OM	chasing ...	did.3SG	/did-3PL
				the tanks chasing ... the track '					
				<i>the tanks chased the track.</i>					

Table E-1. Continued

item	animacy	NO	Preamble	gloss	possible target response
40a	ani	pl-an	قراردادها داوران رو تعیین ...	qærardad-ha davær-an ro ta'in ... agreement-pl referee-pl OM nominating ... the agreements nominating ... the referees' <i>the agreements nominated the referees.</i>	kærd /kærd-æn did.3SG /did-3PL
40b	ani	pl-ha	قراردادها داورها رو تعیین ...	qærardad-ha davær-ha ro ta'in ... agreement-pl referee-pl OM nominating ... the agreements nominating ... the referees' <i>the agreements nominated the referees.</i>	kærd /kærd-æn did.3SG /did-3PL
40c	ani	sg	قراردادها داور رو تعیین ...	qærardad-ha davær ro ta'in ... agreement-pl referee OM nominating ... the agreements nominating ... the referee' <i>the agreements nominated the referee.</i>	kærd /kærd-æn did.3SG /did-3PL
40d	inani	pl-ha	قراردادها قیمت ها رو تعیین ...	qærardad-ha qeimæt-ha ro ta'in ... agreement-pl price-pl OM nominating ... the agreements nominating ... the prices' <i>the agreements nominated the prices.</i>	kærd /kærd-æn did.3SG /did-3PL
40e	inani	Sg	قراردادها قیمت رو تعیین ...	qærardad-ha qeimæt ro ta'in ... agreement-pl price OM nominating ... the agreements nominating ... the price' <i>the agreements nominated the price.</i>	kærd /kærd-æn did.3SG /did-3PL

Table E-2. List of the filler items for Attraction experiment

item	Preamble	gloss					Possible response	
1	رضا و منیژه بچه ها رو سرگرم....	reza	væ	mænizheh	bæche-ha	ro	særgærm ...	kærd-æn
		Reza	and	Manizheh	child-PL	OM	amusing ...	did-3PL
		Reza and Manizheh amusing the children'						
		<i>Reza and Manizheh amused the children.</i>						
2	احسان و امید باغچه ها رو آب....	ehsan	væ	omid	baqch-ha	ro	ab ...	dad-æn
		Ehsan	and	Omid	garden-PL	OM	water ...	gave-3PL
		Ehsan and Omid watering the gardens'						
		<i>Ehsan and Omid watered the gardens.</i>						
3	سودابه و نسترن آینه ها رو پاک....	sudabeh	væ	næstæræn	ayene-ha	ro	pak ...	kærd-æn
		Sudabeh	and	Nastaran	mirror-PL	OM	cleaning ...	did-3PL
		Sudabeh and Nastaran cleaning the mirrors'						
		<i>Sudabeh and Nastaran cleaned the mirrors.</i>						
4	سامان و حسن درسها رو مرور....	saman	væ	hæsæn	dærs-ha	ro	morur ...	kærd-æn
		Saman	and	Hasan	lesson-PL	OM	reviewing ...	did-3PL
		Saman and Hasan reviewing the lessons'						
		<i>Saman and Hasan reviewed the lessons.</i>						
5	مهری و سیما عکسها رو نگاه....	mehri	væ	sima	æks-ha	ro	negah ...	kærd-æn
		Mehri	and	Sima	photo-PL	OM	looking ...	did-3PL
		Mehri and Sima looking at the photos'						
		<i>Mehri and Sima looked at the photos.</i>						
6	دیوارها رو رنگ شیرین و کاوه....	shirin	væ	kaveh	divar-ha	ro	ræang ...	kærd-æn
		Shirin	and	Kaveh	wall-PL	OM	paint ...	did-3PL
		Shirin and Kaveh painting the walls'						
		<i>Shirin and Kaveh painted the walls.</i>						

Table E-2. Continued

item	preamble	gloss					Possible response	
7	مینا و سوسن کفشها رو واکس....	mina	væ	susæn	kæfsh-ha	ro	vaks ...	zæd-æn
		Mina	and	Susan	shoe-PL	OM	waxes ...	stroke-3PL
		Mina and Susan waxes the shoes' <i>Mina and Susan shined the shoes.</i>						
8	من و کیانوش ریاضی رو دوست....	mæn	væ	kiyanush	riyazi	ro	dust ...	dasht-im
		I	and	Kiyanush	math	OM	loving ...	had-1PL
		Kianush and I loving Mathematics' <i>Kianush and I loved Mathematics.</i>						
9	شبنم و من شعر را حفظ....	shæbnæm	væ	mæn	she'r	ro	hefz ...	kærd-im
		Shabnam	and	I	poem	OM	memorizing ...	did-1PL
		Shabnam and I memorizing the poem' <i>Shabnam and I memorized the poem.</i>						
10	من و سوسن فیلم رو تماشا....	mæn	væ	susæn	film	ro	tæmasha ...	kærd-im
		I	and	Susan	film	OM	watching ...	did.1PL
		Susan and I watching the movie' <i>Susan and I watched the movie.</i>						
11	اشکان و من غذا رو درست....	æshkan	væ	mæn	qæza	ro	dorost ...	kærd-im
		Ashkan	and	I	food	OM	preparing ...	did-1PL
		Ashkan and I preparing the food' <i>Ashkan and I prepared the food.</i>						
12	من و هادی شنا....	mæn	væ	hadi	shena ...			kærd-im
		I	and	Hadi	swimming ...			did.1PL
		Hadi and I swimming ' <i>Hadi and I swam.</i>						

Table E-2. Continued

item	preamble	gloss					Possible response	
13	سعید و تو گلدان رو نقاشی....	sæ'id	væ	to	goldan	ro	næqashi ...	kærd-in
		Saeed	and	you	pot	OM	painting ...	did.2PL
		Saeed and you painting the pot'						
		<i>Saeed and you painted the pot.</i>						
14	مریم و نیما نمایش رو تمرین....	mæryæm	væ	nima	næmayesh	ro	tæmrin ...	kærd-æn
		Maryam	and	Nima	play	OM	practicing	did.3PL
		Maryam and Nima practicing the play'						
		<i>Maryam and Nima practiced the play.</i>						
15	حسین بسته ها رو وزن....	hosein		bæste-ha		ro	væzn ...	kærd
		Hosein		parcel-PL		OM	weight ...	did.3SG
		Hosein weighing the parcels'						
		<i>Hosein weighed the parcels.</i>						
16	رفتگر خیابانها رو جارو....	roftægær		xiyabun-ha		ro	jaru ...	kærd
		sweeper		street-PL		OM	sweeping ...	did.3SG
		the street sweeper sweeping the streets'						
		<i>the street sweeper swept the streets.</i>						
17	امین کلم ها رو خرد....	æmin		kælæm-ha		ro	xord ...	kærd
		Amin		cabbage-PL		OM	chopping ...	did.3SG
		Amin chopping the cabbages'						
		<i>Amin chopped the cabbages.</i>						
18	سینا مسئله ها رو حل....	sina		mæs'æle-ha		ro	hæl ...	kærd
		Sina		problem-PL		OM	solving ...	did.3SG
		Sina solving the problems'						
		<i>Sina solved the problems.</i>						

Table E-2. Continued

item	preamble	gloss			Possible response	
19	بابک گوشت ها رو سرخ....	babæk Babak Babak frying the beefs' <i>Babak fried the beefs.</i>	gusht-ha beef-PL	ro OM	sorx ... frying ...	kærd did.3SG
20	شیدا کمد ها رو مرتب....	sheida Sheida Sheida organizing the dressers' <i>Sheida organized the dressers.</i>	komod-ha dresser-PL	ro OM	morætæb ... organized ...	kærd did.3SG
21	علی درختها رو اره....	æli Ali Ali sawing the trees' <i>Ali saw the trees.</i>	deræxt-ha tree-PL	ro OM	ærre ... sawing ...	kærd did.3SG
22	بیٹا شعله ها رو خاموش....	bita Bita Bita putting out the flames ' <i>Bita put out the flames.</i>	sho'le-ha flame-PL	ro OM	xamush ... off ...	kærd did.3SG
23	مینو اتاق رو جارو....	minu Minu Minu vacuuming the room' <i>Minu vacuumed the room.</i>	otaq room	ro OM	jaru ... vacuuming	kærd did.3SG
24	جعفر سطل رو خالی....	jæ'fær Jafar jafar emptying the buckets' <i>jafar emptied the buckets.</i>	sætl bucket	ro OM	xali ... emptying ...	kærd did.3SG

Table E-2. Continued

item	preamble	gloss					Possible response				
25	گیتی برگه ها رو منگنه....	giti	bæрге-ha	ro	mængene	kærd					
		Giti	paper-PL	OM	... stapling ...	did.3SG					
		Giti stapling the papers'									
		<i>Giti stapled the papers.</i>									
26	مهراڻه مهمانان رو دعوت....	mehran	mehman-an	ro	da'væt ...	kærd					
		Mehran	guest-PL	OM	inviting ...	did.3SG					
		Mehrane inviting the guests'									
		<i>Mehrane invited the guests.</i>									
27	شمعها رو روشن رزیتا....	rozita	shæm-ha	ro	roshæn ...	kærd					
		Rozita	candle-PL	OM	turning on ...	did.3SG					
		Rozita turning on.... the candles'									
		<i>Rozita turned on the candles.</i>									
28	سیلاب همه چیز رو با خودش حمل	seilab	hæme	chiz	ro	ba	xod-	hæml ...	kærd		
		flood	every	thing	OM	ba	æsh	with	itself-it	carrying ...	did.3SG
		the flood carrying every thing with itself'									
		<i>the flood carried every thing with itself.</i>									
29	باران هوا رو لطیف....	baran	hæva		ro		lætif ...		kærd		
		rain	weather		OM		purified ...		did.3SG		
		the rain purifying the weather'									
		<i>the rain purified the weather.</i>									
30	قفسه کتابها کنار میز....	qæfæse-ye	ketab-ha	kenar-e	miz ...				bud		
		shelf-EZ	book-ha	beside-EZ	table ...				was.3SG		
		the book shelf beside the table'									
		<i>the book shelf was beside the table.</i>									

Table E-2. Continued

item	preamble	gloss					Possible response
31	سیب قرمز بوی خوبی....	sib-e	qermez	bu-ye	xub-i	...	dasht
		apple-EZ	red	smell-EZ	good-a	...	had.3SG
		Red apple a good smell'					
		<i>Red apple had a good smell.</i>					
32	یادگیری زبان چینی سخت	yadgiri-e	zæban-e	chini	sæxt	...	bud
		learning	language-EZ	Chinese	difficult	...	was.3SG
		Learning Chinese difficult'					
		<i>Learning Chinese was difficult.</i>					
33	هوای پاییزی کمی سرد....	hæva-ye	pa'izi	kæmi	særd	...	bud
		weather-EZ	fall	a little	cold	...	was.3SG
		Fall weather a little cold'					
		<i>Fall weather was a little cold.</i>					
34	برگ نارنجی روی زمین....	bærg-e	narenji	ruye	zæmin	...	bud /oftad
		leaf-EZ	orange	on	ground	...	was.3SG /fall.3SG
		The orange leaf on the ground'					
		<i>The orange leaf was on the ground.</i>					
35	فیلم روز جمعه دیدنی....	film-e	ruz-e	jom'e	didæni	...	bud
		film-EZ	day-EZ	Friday	worth seeing	...	was.3SG
		The film of Friday ... worth seeing'					
		<i>The film shown on Friday was worth seeing.</i>					
36	ظرفشویی کنار پنجره ...	zærfshu'i	kenar-e		pænjære	...	bud
		sink	beside-EZ		window	...	was.3SG
		The sink beside the window'					
		<i>The sink was beside the window.</i>					

Table E-2. Continued

item	preamble	gloss					Possible response	
37	آپارتمان من منظره خوبی....	aparteman-e	mæn	mænzære	xub-i	...	dasht	
		apartment-EZ	I	view	good-a	...	had.3SG	
		My apartment good view'						
		<i>My apartment had a good view.</i>						
38	سالاد کاهو توی یخچال....	salad-e	kahu	tuye	yæxchal	...	bud	
		salad	lettuce	in	fridge	...	was.3SG	
		the lettuce salad in the fridge'						
		<i>the lettuce salad was in the fridge.</i>						
39	هوا ابری....	hæva	æbri	...			bud	
		weather	cloudy	...			was.3SG	
		the weather cloudy'						
		<i>the weather was cloudy.</i>						
40	پاکت میوه روی میز آشپزخونه....	pakæt-e	mive	ruye	miz-e	ashpæzxune	...	bud
		bag-EZ	fruit	on	table-EZ	kitchen	...	was.3SG
		the fruit bag on the kitchen table'						
		<i>the fruit bag was on the kitchen table.</i>						

LIST OF REFERENCES

- Akmajian, A., & Heny, F. (1975). *An introduction to the principles of transformational syntax*. Cambridge, MA: MIT press.
- Antón-Méndez, I., Nicol, J. L., & Garrett, M. F. (2002). The relation between gender and number agreement processing. *Syntax*, 5(1), 1-25.
- Baayen, R. H. (2008). *Analyzing linguistic data: A practical introduction to statistics using R*. Cambridge: Cambridge University Press.
- Baltin, M., & Collins, C. (2003). *The handbook of contemporary syntactic theory*. Malden, Mass: Wiley-Blackwell (pages 483-511).
- Barker, J., Nicol, J., & Garrett, M. (2001). Semantic factors in the production of number agreement. *Journal of Psycholinguistic Research*, 30(1), 91-114.
- Barlow, M. (1988). *Unification and agreement*. Paper presented at the Center for the study of Language and Information. Report NO. CSLI-88-120.
- Barlow, M. (1993). *A suited theory of agreement*, Garland Outstanding Dissertations in Linguistics. Garland, New York.
- Bashiri, I. (1981). *Persian Syntax*. Minneapolis: Burgess Publishing Company
- Bates, E., & MacWinney, B. (1989). Functionalism and the competition model. In B. MacWhinney & E. Bates (Eds.), *The crosslinguistic study of sentence processing* (pp. 10-75). Cambridge, England: Cambridge University Press.
- Bates, E., McNew, S., MacWhinney, B., Devescovi, A., & Smith, S. (1982). Functional constraints on sentence processing: a cross-linguistic study. *Cognition*, 11, 245-299.
- Binnick, R. I. (1991). *Time and the verb: A guide to tense and aspect*. Oxford University Press on Demand.
- Bock, K. (1991). A sketchbook of production problems. *Journal of Psycholinguistic Research*, 20(3), 141-160.
- Bock, J. K., Eberhard, K. M., & Cutting, J. C. (1992). *Controlling number agreement on verbs and anaphors*.
- Bock, K. (1995). Producing agreement. *Current Directions in Psychological Science*, 4(2), 56-61.
- Bock, K. (1996). Language production: Methods and methodologies. *Psychonomic Bulletin & Review*, 3(4), 395-421.

- Bock, K., Butterfield, S., Cutler, A., Cutting, J. C., Eberhard, K. M., & Humphreys, K. R. (2006). Number agreement in British and American English: Disagreeing to agree collectively. *LANGUAGE-BALTIMORE-LINGUISTIC SOCIETY OF AMERICA-*, 82(1), 64.
- Bock, K., & Cutting, J. C. (1992). Regulating mental energy: Performance units in language production* 1. *Journal of Memory and Language*, 31(1), 99-127.
- Bock, K., & Eberhard, K. M. (1993). Meaning, sound and syntax in English number agreement. *Language and Cognitive Processes*, 8(1), 57-99.
- Bock, K., Eberhard, K. M., & Cutting, J. C. (2004). Producing number agreement: How pronouns equal verbs. *Journal of Memory and Language*, 51(2), 251-278.
- Bock, K., Eberhard, K. M., Cutting, J. C., Meyer, A. S., & Schriefers, H. (2001). Some Attractions of Verb Agreement. *Cognitive Psychology*, 43(2), 83-128.
- Bock, K., & Levelt, W. (1994). Language production: grammatical encoding In M. A. Gernsbacher (Ed.), *Handbook of Psycholinguistics* (pp. 945-984). San Diego: Academic press.
- Bock, K., & Miller, C. A. (1991). Broken agreement. *Cognitive Psychology*, 23(1), 45-93.
- Bock, K., Nicol, J., & Cutting, J. C. (1999). The ties that bind: Creating number agreement in speech. *Journal of Memory and Language*, 40, 330-346.
- Bock, K., & Middleton, E. L. (2011). Reaching agreement. *Natural Language & Linguistic Theory*, 29(4), 1033-1069.
- Boland, J. E. (2004). Linking eye movements to sentence comprehension in reading and listening. In M. Carreiras & C. Clifton Jr. (Eds.), *The on-line study of sentence comprehension: Eyetracking, ERP, and beyond* (pp. 51-76). New York: Psychology Press.
- Boland, J. E., & Cutler, A. (1996). Interaction with autonomy: Multiple output models and the inadequacy of the Great Divide. *Cognition*, 58(3), 309-320.
- Carnie, A. (2007). *Syntax: a generative introduction* (2ème éd.): Oxford: Basil Blackwell.
- Chomsky, N. (1965). *Aspects of the Theory of Syntax*. Cambridge, MA: MIT press.
- Clifton, C., Frazier, L., & Deevy, P. (1999). Feature manipulation in sentence comprehension. *Rivista di linguistica*, 11, 11-39.
- Clifton, C., Staub, A., & Rayner, K. (2007). Eye movements in reading words and sentences. *Eye movements: A window on mind and brain*, 341-372.
- Corbett, G. G. (2000). *Number*. Cambridge: Cambridge University Press (pages 54-88).

- Corbett, G.G. (1979). The agreement hierarchy. *Journal of Linguistics*, 15, 203-224.
- Corbett, G.G. (1983). Hierarchies, Target and controllers: Agreement patterns in Slavic. University Park, PA: Pennsylvania State University Press.
- Corbet, G. G. (1994). Agreement. In R. Asher, & J. Simpson Eds.), *Encyclopedia of language and linguistics*. New York:Pergamon Press
- Dabir-Moghaddam, M. (1997). Compound verbs in Persian. *Studies in the Linguistic Sciences*, 27(2), 25-59.
- Dabir-Moghaddam, M. (1982). Passive in Persian. *Studies in the Linguistic Sciences*, 12(1), 63-90.
- Deutsch, A. (1998). Subject-predicate agreement in Hebrew: Interrelations with semantic processes. *Language and Cognitive Processes*, 13(5), 575-597.
- Deutsch, A., & Bentin, S. (2001). Syntactic and Semantic Factors in Processing Gender Agreement in Hebrew: Evidence from ERPs and Eye Movements* 1. *Journal of Memory and Language*, 45(2), 200-224.
- Duffield, C. J. (2012). Subject-verb agreement in English relative clauses: Using speech errors and psycholinguistic approaches to distinguish between syntactic representations. *Working Papers of the Linguistics Circle*, 21(2), 91-99.
- Eberhard, K. M. (1997). The Marked Effect of Number on Subject-Verb Agreement. *Journal of Memory and Language*, 36(2), 147-164.
- Eberhard, K. M. (1999). The accessibility of conceptual number to the processes of subject-verb agreement in English. *Journal of Memory and Language*, 41, 560-578.
- Eberhard, K. M., Cutting, J. C., & Bock, K. (2005). Making Syntax of Sense: Number Agreement in Sentence Production. *Psychological Review*, 112(3), 531-559.
- Eberhard, K. M., Spivey-Knowlton, M. J., Sedivy, J. C., & Tanenhaus, M. K. (1995). Eye movements as a window into real-time spoken language comprehension in natural contexts. *Journal of Psycholinguistic Research*, 24(6), 409-436.
- Fodor, J. A. (1983). *The modularity of mind*. MIT press.
- Franck, J., Lassi, G., Frauenfelder, U. H., & Rizzi, L. (2006). Agreement and movement: A syntactic analysis of attraction. *Cognition*, 101(1), 173-216.
- Franck, J., Soare, G., Frauenfelder, U. H., & Rizzi, L. (2010). Object interference in subject-verb agreement: The role of intermediate traces of movement. *Journal of Memory and Language*, 62, 166-182.

- Franck, J., Vigliocco, G., & Nicol, J. (2002). Subject-verb agreement errors in French and English: The role of syntactic hierarchy. *Language and Cognitive Processes*, 17(4), 371-404.
- Fraser, N. M., & Corbett, G. G. (1994). Gender, animacy, and declensional class assignment: a unified account for Russian. In G. Booij & J. Marle (Eds.), *Yearbook of morphology* (pp. 123-150). Dordrecht: Kluwer.
- Garnham, A., Shillcock, R. C., Brown, G. D., Mill, A. I., & Cutler, A. (1981). Slips of the tongue in the London-Lund corpus of spontaneous conversation. *Linguistics*, 19(7-8), 805-818.
- Garnsey, S. M. (1993). Event-related brain potentials in the study of language: An introduction. *Language and Cognitive Processes*, 8(4), 337-356.
- Garrett, M. F. (1980). Levels of processing in sentence production. In B. Butterworth (Ed.), *Language production, Volume 1: Speech and talk*. London: Academic Press.
- Gazdar, G., Kleen, E., Pullum, G., & Sag, I. (1985). *Generalized phrase structure grammar*. Oxford: Blackwell.
- Ghaniabadi, S. (2009). *Definiteness marking through number*. Paper presented at the Annual conference of the Canadian Linguistic Association, University of Toronto.
- Ghomeshi, J. (1996). Projection and inflection: A study of Persian phrase structure. PhD, University of Toronto.
- Hartsuiker, R. J., Antón-Méndez, I., & van Zee, M. (2001). Object Attraction in Subject-Verb Agreement Construction. *Journal of Memory and Language*, 45(4), 546-572.
- Hartsuiker, R. J., & Barkhuysen, P. N. (2006). Language production and working memory: The case of subject-verb agreement. *Language and Cognitive Processes*, 21(1), 181-204.
- Hartsuiker, R. J., Schriefers, H. J., Bock, K., & Kikstra, G. M. (2003). Morphophonological influences on the construction of subject-verb agreement. *Memory & cognition*, 31(8), 1316.
- Haskell, T. R., & MacDonald, M. C. (2003). Conflicting cues and competition in subject-verb agreement. *Journal of Memory and Language*, 48(4), 760-778.
- Haskell, T. R., & MacDonald, M. C. (2005). Constituent Structure and Linear Order in Language Production: Evidence From Subject-Verb Agreement. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, 31(5), 891-904.

- Häussler, J., & Bader, M. (2009). Agreement checking and number attraction in sentence comprehension: Insights from German relative clauses. *Travaux du cercle linguistique de Prague*, 7.
- Humphreys, K. R., & Bock, K. (2005). Notional number agreement in English. *Psychonomic bulletin & review*, 12(4), 689-695.
- Kaan, E. (2002). Investigating the effects of distance and number interference in processing subject-verb dependencies: An ERP study. *Journal of Psycholinguistic Research*, 31(2), 165-193.
- Karimi, S. (1989). Aspects of Persian syntax, specificity, and the theory of grammar. University of Washington.
- Karimi, S. (1990). Obliqueness, specificity, and discourse functions: Râ in Persian. *Linguistic Analysis*, 20, 139-191.
- Kempen, G., & Hoenkamp, E. (1987). Incremental procedural grammar for sentence formulation. *Cognitive Science*, 11, 201-258.
- Largy, P., & Fayol, M. (2001). Oral cues improve subject-verb agreement in written French. *International Journal of Psychology*, 36(2), 121-131.
- Levelt, W. J. M. (1989). *From intention to articulation*. Cambridge, MA: MIT Press.
- Levin, B. (1993). *English verb classes and alternations: A preliminary investigation*. Chicago: University of Chicago press.
- Lotfi, A. R. (2006). Agreement in Persian. *Linguistik online*, 29.
- MacDonald, M. C., Pearlmutter, N. J., & Seidenberg, M. S. (1994). Lexical nature of syntactic ambiguity resolution. *Psychological review*, 101(4), 676-703.
- MacWhinney, B., Bates, E., & Kliegl, R. (1984). Cue validity and sentence interpretation in English, German, and Italian. *Journal of Verbal Learning and Verbal Behavior*, 23(2), 127-150.
- Mahootian, S., & Gebhardt, L. (1997). *Persian*. New York: Routledge (as a reference).
- Mallinson, G., & Blake, B. J. (1981). *Language typology: Cross-linguistic studies in syntax* (Vol. 46). Amsterdam: North-Holland.
- Meshkat al-dini, M. (1987). *An introduction to Persian transformational syntax*. Mashhad: Ferdowsi University Press.

- Mitchell, D. C. (2004). On-line methods in language processing: Introduction and historical review. In M. Carreiras & C. Clifton Jr. (Eds.), *The on-line study of sentence comprehension: Eyetracking, ERPs and beyond* (pp. 15–32). New York: Psychology Press.
- Mohammad, J., & Karimi, S. (1992). 'Light' verbs are taking over: Complex verbs in Persian. *Proceedings of The Western Conference on Linguistics (WECOL)* 5.195-212.
- Nicol, J. L. (1995). Effects of clausal structure on subject-verb agreement errors. *Journal of Psycholinguistic Research*, 24(6), 507-516.
- Nicol, J. L., Forster, K. I., & Veres, C. (1997). Subject-Verb Agreement Processes in Comprehension. *Journal of Memory and Language*, 36(4), 569-587.
- Pearlmutter, N. J. (2000). Linear versus hierarchical agreement feature processing in comprehension. *Journal of Psycholinguistic Research*, 29(1), 89-98.
- Pearlmutter, N. J., Garnsey, S. M., & Bock, K. (1999). Agreement processes in sentence comprehension. *Journal of Memory and Language*, 41, 427-456.
- Perlmutter, D. M. (1978). *Impersonal passives and the Unaccusative Hypothesis*. *Proceedings of the 4th Annual Meeting, Berkeley Linguistics Society*, 157-89.
- Pollard, C., & Sag, I. A. (1988). *An information-based theory of agreement*. : Stanford University, Center for the Study of Language and Information (Report No. CSLI-88-132)
- Rayner, K. (1998). Eye movements in reading and information processing: 20 years of research. *Psychological bulletin*, 124(3), 372-422.
- Rayner, K., & Sereno, S. C. (1994). Eye movements in reading: Psycholinguistic studies. In M. Gemsbacher (Ed.), *Handbook of psycholinguistics* (pp. 57-81). New York: Academic Press.
- Rayner, K., Sereno, S. C., Morris, R. K., Schmauder, A. R., & Clifton, C. (1989). Eye movements and on-line language comprehension processes. *Language and Cognitive Processes*, 4(3), 21-49.
- Richardson, D. C., & Spivey, M. J. (2004). Eye-tracking: Characteristics and methods. In G. Wnek & G. Bowlin (Eds.), *Encyclopedia of biomaterials and biomedical engineering* (pp. 568-600). New York: Dekker.
- Saadat, E. (1996). Persian Language: Distinguishing between animate and inanimate *Nashr-e Danesh*, 45(86), 239-265.
- Sedighi, A. (2005). *Animacy: the overlooked feature in persian*. Paper presented at the Annual conference of the Canadian Linguistic Association, Ottawa.

- Sedighi, A. (2007). *Agreement restriction in Persian*. Portland, Oregon: Rosenberg.
- Sharifian, F., & Lotfi, A. R. (2007). "When stones falls": a conceptual–functional account of subject–verb agreement in Persian. *Language Sciences*, 29(6), 787-803.
- Spivey, M. J., Tanenhaus, M. K., Eberhard, K. M., & Sedivy, J. C. (2002). Eye movements and spoken language comprehension: Effects of visual context on syntactic ambiguity resolution* 1. *Cognitive Psychology*, 45(4), 447-481.
- Staub, A. (2009). On the interpretation of the number attraction effect: Response time evidence. *Journal of Memory and Language*, 60(2), 308-347.
- Staub, A. (2010). Response time distributional evidence for distinct varieties of number attraction. *Cognition*, 114, 447-454.
- Stemberger, J. P. (1985). An interactive activation model of language production. *Progress in the psychology of language*, 1, 143-186.
- Tabor, W., & Tanenhaus, M. K. (1999). Dynamical models of sentence processing. *Cognitive Science*, 23(4), 491-515.
- Taleghani, A. H. (2008). *Modality, aspect and negation in Persian*. Amsterdam: John Benjamins Pub Co.
- Tanenhaus, M. K., Spivey-Knowlton, M. J., Eberhard, K. M., & Sedivy, J. C. (1995). Integration of visual and linguistic information in spoken language comprehension. *Science*, 268(5217), 1632.
- Tanenhaus, M. K., & Trueswell, J. C. (1995). Sentence comprehension. In J. Miller & P. Eimas (Eds.), *Handbook of perception and cognition: speech, language and cognition* (pp. 217-262). San Diego, CA: Academic Press.
- Thackston, J., & Wheeler, M. (1983). *An introduction to Persian*. Cambridge, MA: Harvard University.
- Thornton, R., & MacDonald, M. C. (2003). Plausibility and grammatical agreement. *Journal of Memory and Language*, 48(4), 740-759.
- Trueswell, J. C., Tanenhaus, M. K., & Garnsey, S. M. (1994). Semantic influences on parsing: Use of thematic role information in syntactic ambiguity resolution. *Journal of Memory and Language*, 33, 285-318.
- Vigliocco, G. (1996). One or more labels on the bottles? Notional concord in Dutch and French. *Language and Cognitive Processes*, 11(4), 407-442.
- Vigliocco, G., Butterworth, B., & Garrett, M. F. (1996a). Subject-verb agreement in Spanish and English: Differences in the role of conceptual constraints. *Cognition*, 61(3), 261-298.

- Vigliocco, G., Butterworth, B., & Semenza, C. (1995). Constructing subject-verb agreement in speech: The role of semantic and morphological factors. *Journal of Memory and Language*, 34(2), 186-215.
- Vigliocco, G., & Franck, J. (1999). When sex and syntax go hand in hand: Gender agreement in language production. *Journal of Memory and Language*, 40, 455-478.
- Vigliocco, G., & Franck, J. (2001). When sex affects syntax: Contextual influences in sentence production. *Journal of Memory and Language*, 45(3), 368-390.
- Vigliocco, G., & Hartsuiker, R. J. (2002). The interplay of meaning, sound, and syntax in sentence production. *Psychological bulletin*, 128(3), 442-472.
- Vigliocco, G., Hartsuiker, R. J., Jarema, G., & Kolk, H. H. J. (1996b). How many labels on the bottles? Notional concord in Dutch and French. *Language and Cognitive Processes*, 11(3), 407-421.
- Vigliocco, G., & Kita, S. (2006). Language-specific properties of the lexicon: Implications for learning and processing. *Language and Cognitive Processes*, 21(7), 790-816.
- Vigliocco, G., & Nicol, J. (1998). Separating hierarchical relations and word order in language production: is proximity concord syntactic or linear? *Cognition*, 68(1), B13-B29.
- Vigliocco, G., & Zilli, T. (1999). Syntactic accuracy in sentence production: The case of gender disagreement in Italian language-impaired and unimpaired speakers. *Journal of Psycholinguistic Research*, 28(6), 623-648.
- Wagers, M. W., Lau, E. F., & Phillips, C. (2009). Agreement attraction in comprehension: representations and processes. *Journal of Memory and Language*, 61(2), 206-237.
- Wertheimer, M. (1993). Untersuchungen zur Lehre von der Gestalt, II. *Psychologische Forschung*, 4, 301-350.
- Windfuhr, G. (1979). *Persian grammar: History and state of its study*. Mouton De Gruyter.

BIOGRAPHICAL SKETCH

Azamosadat Feizmohammadpour received a BA in English Translation from Alame Tabataba'i University, Tehran-Iran and an MA in General Linguistics from Tarbiyat Modarres University, Tehran- Iran. For her MA thesis, she conducted a sociolinguistic study of English language textbooks used in Iranian classrooms. She has studied Ph.D of Linguistics at the University of Florida. For her dissertation, she has conducted five experiments that test the effect of different factors on optional subject-verb number agreement processing in Persian. Her primary research interest is in the intersection of the structure of Persian and psycholinguistics.