Acquisition of English grammatical morphemes

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n the acquisition of a second language, especially when students are exposed to a language morphologically different from their mother tongue, how they represent this new system in their mind is a question that needs to be answered. Within this framework, this study tries to shed light on how morphological knowledge is presented in second language grammar and how that knowledge is developed by Turkish students learning English, a language with a different morphological system.

特に学生が彼らの母国語と形態学的に異なった言語に親しむときの第二言語の習得では、彼らが心でどうこの新しいシステムを表すかは、答えられる必要がある問題である。この枠組みの中では、この研究は異なった形態学的なシステムで形態学的な知識が第二言語文法でどう提示されるか、そして、言語である英語を勉強するトルコの学生がその知識をどう向上させるかを解明しようとする。

Within morphology, mastery of verbal inflection is significant as a possible indication of morphological, syntactic, or semantic competence in second language (L2) acquisition. Interpretations and models of this phenomenon vary. In the grammars of native speakers, there are two routes to producing a past tense; either by reproduction of a memorized (irregular) form, or by applying a general rule to any word-form not recognized as being one of the forms in memory: rule-governed and rote-learned (Pinker, 1999). The distinction may be seen in the difference between regular inflection (e.g. walk-walked), which is productive and open-ended, implicating a rule. Irregular inflection, on the other hand, is closed and unpredictable and hence implicates individually memorized words (e.g. come-came).

For Pinker(1998) “the predictability and open-ended productivity of the regular pattern suggests that regular past tense forms are generated, when needed, by a mental rule, similar in form to other rules of

grammar, such as to form the past tense of a verb, add the suffix-ed" (p.5). Even preschool children, after hearing a novel verb like *rick* , can easily create its regular past tense form, such as *ricked* (Berko in Pinker, 1998). Moreover, children demonstrate their productive use of the rule in another way by overgeneralization. They produce errors such as *breaked* and *comed* in which they over-apply the regular suffix to a verb that is not allowed in English.

In order to obtain empirical support for these views, this paper investigates the issue of second language (L2) verbal inflections in terms of how morphological knowledge is presented in the L2 grammar and how that knowledge is developed. It will focus on learning and using past tense verbs. Since Turkish is an inflectionally rich language in which the past tense and plural morphology is rule-governed, this investigation covers whether the rule-governed system of Turkish morphology has a hindering effect on the acquisition of English.

Past tense morpheme acquisition

Inflectional morphology has taken on particular significance in debates about the nature of cognition since Rumelhart and McClelland (1986) presented their connectionist (single-route) model which involves only association in memory and Pinker(1998) proposed his dual-route model that there are two entirely different mechanisms for the processing of irregular and regular forms. Connectionist accounts of morphological processing and representation make no distinction between regular and irregular inflection. Morphology is generated by associative, memory-based structures (Rumelhart & McClelland, 1993). On the other hand, according to dual-route theory, there are two routes to produce a past tense; either by reproduction of a memorized (irregular) form or by applying a general rule to any word-form not recognized as being one of the forms in memory (Pinker, 1993).

Pinker (1998) distinguishes rote-learning of irregular morphological forms from rule-governed learning of regular morphology. Rule-governing, characteristic of regular morphology, is not associated with specific lexical items, but is generalised to all items of a class. So even new nouns and verbs can be pluralized or changed into past tense by regular rules. In contrast, irregular morphology is remembered as rote-learned individual items.

Morphosyntactic features of Turkish

Turkish is classified as a head-final language with an unmarked SOV word order in main and embedded clauses. Since Turkish morphology is agglutinative, Turkish verbs are inflected for person, number, and tense (Haznedar, 2003). In Turkish, the parts of a word combine in a predictable order. Inflectional morphemes are always used in the word final position whereas derivational suffixes precede inflectional suffixes. The past tense morpheme applies to verbs, and it has eight allomorphs according to the preceding stem vowel and consonant. The suffix vowel and the stem vowel have to share the same specification for both backness and rounding. Also, the suffix consonant and the stem consonant have to share the same voicing. Regardless of the vowel and consonant harmony, past tense marker has a single form, -dI (Yavuz, Balcı, & Turan 2000).

Participants

The participants of the study were elementary level students of the Research and Application Centre for Foreign Languages (YADİM) at Çukurova University. The participants were18-21 years of age and were taking English courses in their first year at the university. Fifty participants undertook tasks involving writing the past forms of the verbs, and 38 wrote past forms of novel verbs.

Instruments

In this study, the data was collected through written tasks. The written tasks were collected within the two months following the study of target structures. The data for the past tense form of the verbs was collected using a list of regular and irregular verbs given to participants. The list covered twenty regular verbs and twenty irregular verbs. The verbs in the list were compiled from the books they had studied. During the lesson, participants were given a short time to fill in the list without looking at their books. The participants were also given a list of novel words to which they should supply the past form. The analysis of how the two systems of English past tense morphology are acquired by Turkish learners was completed from this data.

Results of past tense morpheme in a given list of verbs

Both the open endedness of regular verbs and rule based structure of Turkish may affect the choices of participants for past tense inflection.

Table 1 shows that, among the regular verbs, *study* had the highest percentage (100%) of participants answering with the correct past tense form whereas the regular verb *remember* had the lowest percentage (34%), with only seventeen participants marking it as a regular verb. If we look at the first ten verbs—*study, marry, cry, listen, start, play, work, watch, happen, look*—we see that the rate of correct inflections was higher than 80%. On the other hand, the other ten verbs—*wash, walk, die, prepare, create, answer, brush, climb, deliver, remember*—were correctly inflected less than 80% of the time. This does not mean these verbs were answered as incorrectly. Beside the correct and incorrect forms of the verbs, participants also stated that there was no change in the verb for the past tense form or gave no answer. This could result from having no acquaintance with these verbs or not knowing their past forms. When participants were not sure about the past form of the verb, they tended not to answer.

Results of regular past tense morpheme in a given list of verbs

When the errors made in the production of the regular past form was investigated, it became apparent that participants made spelling errors and connections with phonologically similar words, novel verbs which do not follow any rule, analogy, and wrongly suffixed the verbs. The categories of errors for incorrect forms of regular verbs are given in Table 2.

Table 1. Analysis of verbs in terms of regular and irregular forms

Regular verbs								Irregular verbs							
Verbs	corr.	%	incorr.	%	no change	%	no answer	%	Verbs	corr.	%	incor.r	%	no change	%	no answer	%
1-study	50	100	-	0	-	-	-	-	21-do	45	90	2	4	-	-	3	6
2-marry	47	94	-	0	-	-	3	6	22-become	44	88	2	4	-	-	4	8
3-cry	47	94	-	0	-	-	3	6	23-buy	33	66	9	18	1	2	7	14
4-listen	46	92	1	2	-	-	3	6	24-swim	31	62	12	24	-	-	7	14
5-start	44	88	-	0	2	4	4	8	25-getup	29	58	4	8	3	6	14	28
6-play	44	88	3	6	1	2	2	4	26-write	29	58	14	28	-	-	7	14
7-work	44	88	-	0	-	-	6	12	27-be	27	54	3	6	-	-	20	40
8-watch	43	86	1	2	1	2	5	10	28-win	27	54	10	20	1	2	12	24
9-happen	42	84	1	2	-	-	7	14	29-run	24	48	8	16	5	10	13	26
10-look	41	82	-	0	-	-	9	18	30-fight	22	44	11	22	2	4	15	30
11-wash	39	78	-	0	-	-	11	22	31-speak	22	44	14	28	2	4	12	24
12-walk	39	78	-	0	2	4	9	18	32-leave	20	40	19	38	-	-	11	22
13-die	38	76	1	2	1	2	10	20	33-lose	16	32	20	40	-	-	14	28
14-prepare	31	62	-	0	-	-	19	38	34-make	15	30	13	26	2	4	20	40
15-create	30	60	-	0	1	2	19	38	35-grow	15	30	15	30	1	2	19	38
16-answer	29	58	-	0	1	2	20	40	36-hit	12	24	18	36	-	-	20	40
17-brush	27	54	7	14	-	-	16	32	37-send	11	22	17	34	2	4	20	40
18-climb	26	52	4	8	-	-	20	40	38-read	9	18	16	32	-	-	25	50
19-deliver	25	50	2	4	1	2	22	44	39-think	6	12	21	42	-	-	23	46
20-remember	17	34	-	0	1	2	32	64	40-teach	4	8	30	60	1	2	15	30

Table 2. Samples of incorrect forms of regular verbs

Regular verbs	corr.%	Spelling errors	Ortographic Analogy	Phonological Analogy	Novel verbs	Wrongly suffixed
1-study	100	-	-	-	-	-
2-marry	94	-	-	-	-	-
3-cry	94	-	creat	-	-	-
4-listen	92	-	-	-	-	-
5-start	88	-	-	-	-	-
6-play	88	plaied pleyed	-	-	-	-
7-work	88	-	-	-	-	-
8-watch	86	watche	-	-	-	-
9-happen	84	-	-	-	happenen	-
10-look	82	-	-	-	-	-
11-wash	78	-	-	-	-	-
12-walk	78	-	-	-	-	-
13-die	76	-	dead	-	-	-
14-prepare	62	-	-	-	-	-
15-create	60	-	-	-	-	-
16-answer	58	-	-	-	-	-
17-brush	54	brused	brought	-	brash brosh	-
18-climb	52	-	-	clamb	clumb-	-
19-deliver	50	-	-	-	dolever	delivers
20-remember	34	-	-	-	-	-

One example in our study of observed spelling errors was that for *play* as play-plaied, played. An example of incorrectly forming a connection through orthographic analogy is *cry-creat,* showing similarity with the verb *create.* One of the participants also made a connection between the verbs *die-dead* although they belong to different grammatical categories, as *die* is its *dead* adjectival form.

Phonological similarity between the given verbs and responses to these verbs is shown in the example of the past form of the verb *climb-clamb,* which illustrates the rule for generative phonology applied to irregular morphology proposed by Chomsky and Halle and Halle and Mohanan (both in Pinker, 1999).

Irregular past tense verbs tend to cluster with other phonologically similar past tense verbs (e.g., *sing/sang*, *spring/sprang*, *ring/rang*; *stink/stank*, *drink/drank*, *sink/sank*, etc.) and there is empirical evidence that novel verb stems can be inflected irregularly if they are phonologically analogous to existing irregular verb forms: the more phonologically similar a nonce to a pattern, the more likely it is to be irregularized (Bybee & Moder, in Ramscar, 2002).

However, according to Pinker (1993) past marking is independent of phonology, which determines the possible sound sequences. Pinker proposes that the past tense of *sink* is *sank* and the past tense of *ring* is *rang*, but the past tense of *cling* is not *clang*, but *clung.* Although there are changes in the past form of the verbs, in most irregular verbs the phonological content of the stem is largely preserved in the past forms as in *swing-swung.* Also in our data, past form of the verb *climb* was given as *clamb* for the past tense form like *lie-lay*; whereas, there was another example for the past tense form of *climb* as *clumb* which can be defined as novel verb.

a) climb-*clamb*
Example of phonological similarity between the verb forms
b) climb-*clumb*, *brush-brash, brosh, climb-clumb* and *deliver-dolever*
Examples of novel verbs that do not follow any phonological rule

Only one example of the wrong suffix was seen in *delivers*, adding 3rd person singular -s morpheme to the verb *deliver*.

Results of irregular past tense morphemes in a given list of verbs

As for the detailed analysis of the same list of verbs with irregular forms almost the same categories of errors were observed apart from the type of samples related to participants applying the regular-ed form to irregular verbs. The incorrect usages of irregular verbs are presented in Table 3.

The data demonstrates that twelve irregular verbs have a low rate of correct responses, at 48% and below. *Run, fight, speak, leave, lose, make, grow, hit, send, read, think, teach* were regularized by applying -ed to the verb stem. According to Pinker (1998) "regular inflection applies freely in any circumstance in which memory fails because regular inflection is computed by a mental operation that does not need access to contents of memory, namely, a symbol-processing rule"(p.27).

Table 3. Samples of incorrect forms of irregular verbs

Incorrect forms of irregular verbs						
Verbs	**corr%**	**Regularization**	**Ortographic Analogy**	**Phonological Analogy**	**Novel verb**	**Wrongly suffixed**
1-do	90	-	went want	-	-	-
2-become	**88**	**becamed**	begin	-	-	-
3-buy	66	buyed(3) buied	boy by	Bay	-	-
4-swim	62	swimed(9) *swimmed	-	-	swom	-
5-getup	58	*getupped	got	-	gatup	-
6-write	58	writed(12)	-	-	wrate	-
7-be	54	-	is begin am-is-are	-	-	-
8-win	54	*winned	-	Wun	wan wen	-
9-run	48	runed(4) *runned	-	-	ron	-
10-fight	44	fighted(8)	-	-	foght faght	-
11-speak	44	speaked(6)	-	-	spook spake sapuk	speaks
12-leave	40	leaved(16)	lost loft	-	-	-
13-lose	32	losed(17)	last	-	loset	-
14-make	30	maked(10)	mad	-	-	-
15-grow	30	growed(7)	-	-	graw grive	-
16-hit	24	hited(4) *hitted	hot hat	-	-	-
17-send	22	sended(12)	sand	sond	-	-
18-read	18	readed(10)	road ride rode	-	-	-
19-think	12	thinked(10)	-	thank	-	-
20-teach	8	teached(24)	touch teeth	-	teac teacht	-

The percentage of irregularization seemed to be low, but this does not mean that all verbs were answered incorrectly because participants gave no answer to some verbs. Regularization of irregular verbs can be explained by the rule-based structure of Turkish, since adding the past tense morpheme *-dI* at the end of verbs denotes past form in participants' first language. Learners with such a rule based first language may apply the same rules to English despite that language being both rule-governed for regular verbs and rote-learned for irregular forms. It is possible that participants answered in this way because they make an analogy within the verbs by associating them with another word based on orthographic or phonological features, such as do-*went, want,* become-*begin.*

Likewise, in the incorrect usage of irregular verbs, participants produced phonologically similar words for irregular past tense forms. Participants applied the rules of phonology for the following verbs:

buy-*bay* similar to the change in lie-*lay*

think-*thank* similar to the change in sing-*sang*

win-*wun* similar to the change in stick-*stuck*

send-*sond* similar to the change in sell-*sold*

There were also examples for novel verbs which have no meaning and do not have any rule in form such as get up-*gat up,* win-*wen.*

Results of past tense morpheme in a given list of novel verbs

In the other set of data, a list of novel verbs was presented to 38 participants and they were asked to write the past form of these novel verbs. The list consisted of 30 novel verbs, half of which were originally regular and the other half of which were irregular. According to Pinker (1993), past marking is independent of phonology and meaning and similarity of meaning does not imply similarity of form. For example *hit-strike* and *slap* have similar meanings but different past forms: *hit-hit, strike-struck, slap-slapped*. However, Pinker does not eliminate the possibility of a semantic influence on the inflection process (1993). On the other hand, for Ramscar (2002) existence of phonologically similar verbs that take different patterns of inflection provides a good area in which to explore the idea that semantic similarity may play a part in inflection in relation to phonological similarity.

The participants produced past verb forms showing phonological similarities between regular and irregular forms of the verbs and novel verbs which do not follow any phonological rules. In our study, we also investigated whether semantic similarity played a part in inflection by asking participants to inflect a novel verb phonologically similar to a regular or irregular verb.

The novel verbs were analysed according to whether they were originally regular or originally irregular and were categorised in terms of regularization, irregularization, no change and no answer. The results of originally regular novel verbs are presented in Table 4.

Table 4. Results of originally regular verb inflections

Originally regular verbs	Regularization N	%	Irregularization N	%	No change N	%	No answer N	%
1-betire-*retire*	36	94.7	1	2.6	-	-	1	2.6
2-rehave-*behave*	34	89.4	3	7.8	-	-	1	2.6
3-verve-*serve*	34	89.4	2	5.2	-	-	2	5.2
4-deturn-*return*	31	81.5	4	10.5	1	2.6	2	5.2
5-shry-*cry*	31	81.5	2	2.6	3	7.8	2	5.2
6-treate-*create*	30	78.9	5	13.1	-	-	3	7.8
7-falk-*talk*	28	73.6	8	21	-	-	2	5.2
8-satch-*watch*	28	73.6	8	21	1	2.6	1	2.6
9-tecord-*record*	27	71	4	10.5	4	10.5	3	7.8
10-pie-*die*	26	68.4	5	13.1	5	13.1	2	5.2
11-tlay-*play*	26	68.4	9	23.6	2	2.6	1	2.6
12-flean-*clean*	25	65.7	11	28.9	-	-	2	5.2
13-liss-k*iss*	23	60.5	9	23.6	4	10.5	2	5.2
14-nook-*look*	14	36.8	17	44.7	4	10.5	3	7.8
15-sall-*call*	10	26.3	21	55.2	4	10.5	3	7.8

From novel verbs which were originally regular, participants produced regular and irregular forms. More than 60% of the participants tended to treat these verbs as regular. However, there were two verbs-*nook* and *sall*-which were treated as regular by only 36% and 26% of the participants respectively. The tendency to regularized was similar to the verb list task explained above. Semantic association of the novel verbs with a known verb might have influenced participant choice of past form.

While the participants tended to regularize this category of novel verbs, they also created past tenses which were irregular. This data, where originally regular novel verbs were irregularized, is presented in Table 5.

Table 5. Samples of irregularized novel verbs which were originally regular

Originally regular verbs	Incorrect forms of novel verbs originally regular			
	Spelling errors	Ortographic Analogy	Phonological Analogy	Unclear words
1-betire-*retire*	-	-	-	-
2-rehave-*behave*	-	-	-	rehaven
3-verve-*serve*	-	-	-	verv
4-deturn-*return*	-	-	-	detrn
5-shry-*cry*	shryed	-	-	-
6-treate-*create*	treatied	-	-	-
7-falk-*talk*	-	-	-	fook
8-satch-*watch*	-	-	-	saught
9-tecord-*record*	tecored	-	-	-
10-pie-*die*	-	pay	pay	pid
11-tlay-*play*	tlaid	-	-	-
12-flean-*clean*	-	-	feant	-
13-liss-k*iss*	-	liss,less	-	-
14-nook-*look*	-	-	noke	-
15-sall-*call*	-	salt	-	saly

Another analysis was carried out for novel verbs which were originally irregular. The results of the analysis in terms of regularization and irregularization are presented in Table 6.

Table 6. The results of the analysis of novel verbs originally irregular

Originally Irregular verbs	Regularization N	%	Irregularization N	%	No change N	%	No answer N	%
1-set-*let*	2	5.2	35	92.1	-	-	1	2.6
2-reet-*meet*	9	23.6	34	89.4	2	5.2	1	2.6
3-fleep-*sleep*	9	23.6	28	73.6	-	-	1	2.6
4-chut-*shut*	9	23.6	28	73.6	-	-	3	7.8
5-tring-*bring*	9	23.6	26	68.4	2	5.2	1	2.6
6-beed-*feed*	5	13.1	24	63.1	6	15.7	3	7.8
7-nell-*tell*	4	10.5	23	60.5	8	21	3	7.8
8-cuild-*build*	9	23.6	20	52.6	4	10.5	5	13.1
9-lind-*find*	15	39.4	20	52.6	2	5.2	1	2.6
10-kight-*fight*	19	50	16	42.1	1	2.6	2	5.2
11-chrow-*throw*	20	52.6	15	39.4	1	2.6	2	5.2
12-crive-*drive*	22	57.8	13	34.2	1	2.6	2	5.2
13- lean-*mean*	22	57.8	12	31.5	2	5.2	2	5.2
14-seach-*teach*	25	65.7	9	23.6	-	-	4	10.5
15-sose-*lose*	28	73.6	6	15.7	-	-	4	10.5

Unlike the verb list given previously, the percentages of correct irregularization were high in the novel verbs analysis. Nine out of fifteen originally irregular novel verbs produced more than 50% correct forms. This may show that participants' inflection of a novel verb can be influenced by previously witnessed inflections. As Ramscar (2002) proposes, semantic similarity could affect the inflection of the past tenses of novel English verbs when phonological similarity constraints are satisfied. If people encounter a novel verb form that is phonologically close to two different existing verbs but semantically close to only one of them, then they are likely to inflect the novel verb in the same way as the semantically similar verb. According to Ramscar (2002) if no semantic similarity holds between a novel and an existing irregular verb, and there is positive semantic similarity between that novel verb and an existing regular verb, then the novel verb will be inflected regularly.

A detailed analysis of the correct and incorrect forms of the novel verbs which were originally irregular is presented in Table 7.

Table 7. Samples of regularized novel verbs which were originally irregular

Originally irregular verbs	Incorrect forms of novel verbs originally irregular		
	Ortographic Analogy	Phonological Analogy	Unclear words
1-set-*let*	-	-	-
2-reet-*meet*	-	-	-
3-fleep-*sleep*	-	-	floap
4-chut-*shut*	-	-	chught
5-tring-*bring*	tried	trung, trang	troke
6-beed-*feed*	-	-	bod
7-nell-*tell*	-	-	nill
8-cuild-*build*	could	-	cult
9-lind-*find*	-	-	-
10-kight-*fight*	-	-	knight
11-chrow-*throw*	-	-	-
12-crive-*drive*	-	-	-
13- lean-*mean*	-	lent	-
14-seach-*teach*	-	-	-
15-sose-*lose*	-	-	sosy

Here, all participants regularized novel verbs at least once. Among the regularized forms of the irregular verbs one participant regularized *fleep* as *flee**pp**ed*, doubling the consonant *p* at the end of the verb stem. Other interesting irregularizations included one of the participants producing *tried* for the novel verb *tring*, possibly indicating a perceived resemblance with the verb *try*. Another example involved the novel verb, *cuild,* which may have been perceived as similar to the modal verb *could*. As for phonological analogy, two participants produced examples such as tring-trung-trang and another three participants used *tring-trought*. One of the participants utilized *lent* for the originally irregular verb *lean*. Participants also produced different forms of novel verbs which did not demonstrate any phonological or semantic relationship such as tring-*troke,* and beed-*bod*.

In order to explore the idea of how the verbs are inflected in the past tense, the data in our study was collected from a list of regular and irregular verbs and also a novel verb list consisting of originally regular and irregular verbs. According to the results of the past tense verbs, it was observed that both phonological similarity and semantic similarity played a part in forming regular or irregular past forms of the verbs. However, there were examples of incorrect forms of both regular and irregular verbs which do not follow any phonological or semantic rule. For that reason, it is difficult to propose a rule for the production of the past tense inflection.

Conclusion

In this study, in order to explore the idea of how verbs are inflected in past tense, data was collected from a list of regular and irregular verbs and a novel verb list consisting of originally regular and irregular verbs. Both phonological similarity and semantic similarity played a part in forming past forms of the verbs. The past tense inflectional system may have been affected by the participants' native language, Turkish, which has a rule-based structure for past tense inflections. The phonological similarities observed in producing the past forms of regular and irregular verbs may show a transfer from Turkish since the past tense suffix /dI/ should follow two phonological rules in order to inflect past tense: final devoicing and vowel harmony. Applying these phonological rules in their native language, the participants may follow the same rules in the production of past tense inflection in English. However, when the data was analysed in detail, it was observed they were not explained exclusively by L1 interference.

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