PROCESSING RELATIVE CLAUSES IN TURKISH AS A SECOND LANGUAGE

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PROCESSING RELATIVE CLAUSES IN TURKISH AS A SECOND LANGUAGE

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The present study focuses on the processing of relative clauses in Turkish as a second language. The specific purpose of the study is to address the gap in the previous research with regard to why certain relative clause constructions should be more difficult to process than others. For example, in English, object relative clauses such as "the lion that the cow carries" are more difficult to comprehend and produce than subject relative clauses such as "the lion that carries the cow." It has been stated for both L1 and L2 learners that these observed differences in difficulty parallel the implicational relationships in Keenan and Comrie's (1977) Noun Phrase Accessibility Hierarchy Hypothesis (NPAH). Although there has been some research on this issue, the question of *why* the acquisition order follows this pattern has never fully been answered since different theories make the same predictions for languages that have been investigated thus far. However, in an SOV language like Turkish, because of its particular structural characteristics, the predictions of those theories diverge, and thus their separate effects can be disentangled. Therefore, the present study explores the issue using the Turkish language. The results of picture selection tasks taken by 20 English and 7 Japanese, Korean and Mongolian learners of Turkish indicate that learners have an easier time with processing object relative clauses than subject relative clauses contrary to the results in the literature for the same construction in other languages. These results have significant implications for the theory of second language acquisition. These implications include, among others, questions about the accuracy of current views of "interlanguages" (language learner languages) and of the role of "language universals" in second language acquisition.

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1.0   INTRODUCTION

Language learners must *process* language forms in order to comprehend and produce them (Izumi, 2003). To do so requires overcoming various processing difficulties caused by the grammar. One grammatical structure that has been studied in order to increase our understanding of such processing difficulties is the relative clause (RC) construction:

(1)   the lion that [__carries the cow]

(2)   the lion that [the cow carries __]

The present study focuses on the processing of relative clauses in Turkish by adult foreign language (L2) learners. The specific purpose of the study is to address the gap in the previous research with regard to why certain relative clause constructions should be more difficult to process than others.

2.0   RESEARCH ON RELATIVE CLAUSE ACQUISITION

One of the crucial findings of research on relative clauses is that English subject relative clauses as in (1) are easier to comprehend and produce than direct object relatives as in (2). It has been stated for both L1 and L2 learners that these observed differences in difficulty parallel the implicational relationships in Keenan and Comrie's (1977) Noun Phrase Accessibility Hierarchy Hypothesis (NPAH).

This relativization hierarchy, from most accessible for relativization to least accessible, is as follows: subject > direct object > indirect object > object of a preposition > genitive > object of comparison. Below, examples are given for each:

> (3)   a. Subject RC: the lion [that __carries the cow]
>
> b. Object RC: the lion [that the cow carries __]
>
> c. Indirect Object RC: the lion [that the cow gave the food to __]
>
> d. Object of a preposition: the lion [whom the cow has been arguing about __]
>
> e. Genitive RC: the lion [whose house the cow saw __]
>
> f. Object of Comparison RC: the lion [who the cow is taller than __]

Many studies in both L1 and L2 found support for the NPAH (eg., Gibson, 1998; Gibson & Schutze, 1999 for first language acquisition and Doughty, 1991; Gass, 1979; Izumi, 2003; O'Grady, 1999 for second language acquisition). To substantiate this claim in second language acquisition, among others, Gass (1979) presented data from learners of English from a variety of

native languages such as Arabic, Chinese, Farsi, French, Italian, Japanese, Korean, Portuguese and Thai. Based on data from free compositions, sentence combination tasks, and grammaticality judgments, she argued that students' difficulty with relative clause constructions could be predicted on the basis of the NPAH. Later, many other studies in both L1 and L2 supported these results. One such study in L2 was by Doughty (1991). With her adult L2 participants, Doughty used a composite of written sentence combination test, grammaticality judgment tests, and oral picture-cued production test, and found support for the accessibility hierarchy.

The focus of the present research is on the processing of the first two (subject and object) positions in this hierarchy. Moreover, the present research (as well as the NPAH) is concerned only with the noun phrases that can be relativized, and is not concerned with their position in the matrix sentence. Thus, their position in the matrix sentence will be kept constant here. This decision is to minimize the various complications that might be caused by certain other factors like additional syntactic structures and accompanying garden path effects, which have been found to affect the results independent of whether the clause is an object or a subject RC (Juffs and Harrington, 1996; Juffs, 1998b, 2004).

For a discussion of RCs' positions in the matrix sentence and the observed differences in difficulty, see MacWhinney, 1977; MacWhinney & Pleh, 1988; and Hamilton's (1994) SO Hierarchy Hypothesis (SOHH). For example, Hamilton's SOHH posits an implicational relationship among four types of relative clause sentences based on the notion of processing discontinuity[1]. The specific order of difficulty is predicted based on the number of discontinuities in the structure, and is as follows: object-subject (OS) > object-object (OO) / subject-subject (SS)

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[1] Processing discontinuity can be defined in two ways: One is the discontinuity caused when the main clause is interrupted by an RC. The other is a discontinuity caused by phrasal boundaries within the RC that separate the relative pronoun and the wh-trace caused by relativization (Izumi, 2003).

> subject-object (SO). (For each pairing, the head[2] noun's function within the "matrix clause" is given first, and the relative pronoun's function within the "RC" is given next.) Example sentences of each type are presented in (4) below:

(4)   a. OS   The cow saw the lion that [IP __ bit the bird].

      b. OO   I know the lion that [IP the cow [VP saw __]].

      c. SS   The lion [that [IP __ bit the bird]] chased the cow.

      d. SO   The lion [that [IP the cow [VP saw __]]] was mischievous.

However, as we said above, in this study, we will not be dealing with the RCs' position in the matrix sentence or with the SOHH. What we will be dealing with, instead, is the RC itself or Keenan and Comrie's (1977) NPAH and its implications for second language processing.

As stated above, the NPAH has treated subject relatives such as (1) as typologically less marked than object relatives such as (2). This has later raised the question of *why* the acquisition process follows this pattern. After all, this effect cannot be caused by lexical frequencies, discourse context or real-world plausibility, because these are controlled (the same) between the two types of relative clauses (Gibson, 1998; Hsiao & Gibson, 2003; O'Grady, Lee & Choo, 2003). In other words, "both structures involve the same lexical items in equally plausible relationships among one another" (Gibson, 1998, p. 2). Therefore, the difference must be related to structure. To put it another way, "processing considerations" must be responsible for the contrast between the two patterns.

And these processing considerations are important for SLA, because they are necessary for a theory of *how* L2 is acquired (as well as a theory of *what* is acquired) (Juffs, 2004). This is because processing is involved in the acquisition of novel representations (White, 1987), and

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[2] See footnote 4 for a definition of what a 'head' is.

since processing is involved in explaining how those novel representations are acquired, understanding L2 processing is necessary for an overall theory of SLA. In our case, subject vs. object relative clauses, these processing considerations can be accounted for by the different demands put on the processor caused by the differences in the complexity of the two relative clause patterns (e.g., Gordon, Hendrick, & Johnson, 2004).

While this much is known, it still remains a question what specifically makes a relative clause like (2) more difficult than (1) in the human sentence processing mechanism. A fair number of possibilities have been proposed as an answer. These possibilities can be gathered under three categories: Linear Distance Hypothesis (LDH), Structural Distance Hypothesis (SDH) and Word Order Difference Hypothesis (WDH):

2.1   A NUMBER OF POSSIBILITIES

2.1.1   Linear distance hypothesis (LDH)[3].

The LDH has been suggested by Tarollo & Myhill (1983) and Hawkins (1989), and alleges that the difficulty of relative clauses can be predicted by the linear distance between the head[4] and the gap[5] (O'Grady, Lee, Choo, 2003). In its original form suggested by Tarollo & Myhill and Hawkins, to implement this idea, one simply needs to count the number of intervening words between the head

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[3] The abbreviations have been coined by the researcher.
[4] 'Head' is a constituent that determines the properties of a complex phrase. For example, in "the lion that carries the cow," since the whole clause refers to 'the lion' (not 'the cow' or 'carries'), 'lion' is the head. In English RCs, the head is always the leftmost element whereas in Turkish it is always the rightmost one.
[5] The theory assumes that if an element is 'moved' in the course of a derivation, it leaves a trace in its original position. This trace is called a 'gap.' For example, the RC "the lion that [__ carries the cow]" is assumed to have been derived from the sentence "The lion carries the cow," where 'the lion' moves leftward leaving a gap in its original position.

and the gap.   However, another possible implementation has been introduced later by Gibson, in which only the elements introducing new discourse referents (noun phrases and main verbs) are calculated (eg., Gibson, 1998; Babyonyshev & Gibson, 1999; Pearlmutter & Gibson, 2001; Warren & Gibson, 2002). Gibson calls this version "Syntactic Prediction Locality Theory (SPLT)," and claims that it has both an integration- and a storage-cost component.   The integration-cost component suggests that the integration of a new head into the structure becomes more difficult as the distance between the head and the gap increases. The storage (memory)-cost component, on the other hand, suggests that predictions that are made earlier in the sentence become more difficult to maintain in memory as the distance between the head and the gap increases. Although Gibson does not actually say that his theory SPLT is a version of the LDH, given the similarities between the two approaches, both will be dealt with under the category LDH in this paper.

In (5) below, these two versions of the Linear Distance Hypothesis are applied to English subject and direct object relative clauses. The linear distance between the head and the gap - as expected respectively by the first and second versions of the hypothesis - is given in italics:

(5)   a. <u>Subject relative</u>

the lion that [__ carries the cow] *1 word or 0 words*

b. <u>Object relative</u>

the lion that [the cow carries ___] *4 words or 3 words*

As seen, whether the first or the second version of the linear distance hypothesis is employed, the result is the same; that is, there is a shorter distance between the head and the gap in the case of subject relative clauses than in the case of direct object relative clauses. This yields the prediction in (6):

(6)   Subject RCs should be easier than direct object RCs.

2.1.2 Structural distance hypothesis (SDH).

The structural Distance Hypothesis covers approaches which claim that the difficulty of relative clauses - as well as other gap-containing structures like *wh*-questions - can be predicted by the differences in the depth of embedding of the gap (e.g., Collins, 1994; Hamilton, 1995; Hawkins, 1999; O'Grady, 1997, 1999). O'Grady (1999, p. 628) gives us insight into its implementation: He states that the relative difficulty of subject and object relative clauses can be "determined by the distance calculated in terms of intervention nodes between the gap and the [head]." This means that by counting the number of the nodes intervening between the gap and the head of the relative clause, one can determine the respective difficulties of subject and direct object relative clauses.

In (7) below, the Structural Depth Hypothesis is applied to English subject and direct object relative clauses. The structural distance between the head and the gap is given in italics:

(7)   a. Subject relative

         the lion [CP that [IP__ carries the cow]]   *2 nodes (CP & IP)*

         b. Object relative

         the lion [CP that [IP the cow [VP carries ___]]]   *3 nodes (CP, IP & VP)*

As seen, the structural distance between the head and the gap is shorter in a subject relative clause (2 nodes) than in a direct object relative clause (3 nodes).[6] This yields the same prediction as the Linear Distance Hypothesis does:

(8)   Subject RCs should be easier than direct object RCs.

---

[6] The same asymmetry arises in theories that do not use functional projections. In that case, the intervening nodes would be *S* in the case of subject RCs and *S & VP* in the case of object RCs.)

2.1.3   Word order difference hypothesis (WDH)[7]

The influence of canonical vs. non-canonical word order on the processing of complex structures like relative clauses has been investigated especially by cognitive psychologists such as MacDonald & Christiansen (2002) and Tabor, Juliano, & Tanenhaus (1997).   In particular, MacDonald & Christiansen state, "Subject relatives are relatively regular in their word order because this structure has the same word order as simple active one-clause sentences, which are very frequent in English" (2002, p. 40).   Therefore, they suggest that comprehension processes for subject relatives are "aided by a comprehender's experience with simple sentences." They add that this kind of aid is not the case for object relatives since they have a more irregular word order. In other words, in this framework, a person's previous experience with simple sentences (with canonical word order) is less relevant in the case of direct object relatives than subject relatives.

In (9) below, the predictions of the Word Order Difference Hypothesis are applied to English subject and direct object relative clauses. The different word orders are given in italics:

(9)   a. <u>Subject relative</u>

the lion [_{CP} that [_{IP}__ carries the cow]]   *S V O (canonical)*

b. <u>Object relative</u>

the lion [_{CP} that [_{IP} the cow [_{VP} carries ____]]]   *O S V (non-canonical)*

These examples indicate that the canonical word order that MacDonald & Christiansen mention is present in 9a. In contrast, this is clearly not the case in 9b. in that its word order is OSV in contrast to the English canonical word order SVO. This yields exactly the same prediction as the LDH and the SDH does:

(10)   Subject RCs should be easier than direct object RCs.

---

[7] The name of the hypothesis has been coined by the researcher.

2.2   TOWARDS DISENTANGLING THE EFFECTS

As can be understood from the discussion so far, the LDH, SDH and WDH make the same prediction for English relative clauses: "Subject RCs should be easier than direct object RCs." In a language like Turkish, however, the predictions of the three theories diverge; therefore, the separate effects of the LDH, SDH and WDH can be disentangled:

2.2.1   Turkish.

A comparison of (11a) and (11b) below reveals that the *linear* distance between the head and the gap is shorter in direct object relatives (1 word) than in subject relatives (2 words) while the *structural* distance is shorter in subject relatives (1 node) than in direct object relatives (2 nodes):

(11)   a. Subject relative

	LDH	SDH	WDH
[IP___ inek-i taşı-an] aslan			
cow-ACC carry RC s. lion	2 words	1 node	not canonical (OVS)
"the lion that carries the cow"			

b. Object relative

	LDH	SDH	WDH
[IP inek-in [VP___taşı- dığı]] aslan			
cow-GEN carry RC s. lion	1 word	2 nodes	not canonical (SVO)
"the lion that the cow carries"			

This suggests that the LDH predicts direct object relatives will be easier while the SDH predicts subject relatives will be easier. As for the WDH, since neither subject nor object relatives indicate the canonical SOV word order of Turkish, its possible effects are to some extent

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controlled.[8] Therefore, Turkish will provide some evidence into which side of the discussion wins, which is not possible with data from English!

Note also that different versions of the LDH also have different predictions. That is, whether one counts every word between the head and the gap or only those words that introduce new discourse elements, the relationship stays the same: The *linear* distance between the head and the gap is shorter in direct object relatives (1 word) than in subject relatives (2 words). When, however, one counts the words between the gap and the null operator (instead of gap and head), then the prediction of the LDH changes given that subject gaps in Turkish are linearly closer to the null operator (0 words) than object gaps (1 words).

The relative clauses in (11a) and (11b) can be structurally represented as in (12a) and (12b):

---

[8] Note, however, that the effects of the WDH are not completely controlled since the word order is different in each case (OVS vs. SVO). Thus, it might be that one of these two types of word order is more common in Turkish than the other. In order to really disentangle the effects of word order, a corpus analysis is required to see which of the two is more frequent.

(12)   a.

```
                              NP
                    _____
                  Spec                      N'
                                    _____
                                   CP               N'
                              _____            |
                            OP_i       C'          N_i
                                   _____       lion
                                  IP        C
                             _____
                            NP        I'
                            |      _____
                           e_i    VP       I
                              _____
                             Spec       V'
                                    _____
                                   NP        V
                                   |      carry-an
                                   N'
                                   |
                                   N
                                 cow-Acc
```

11
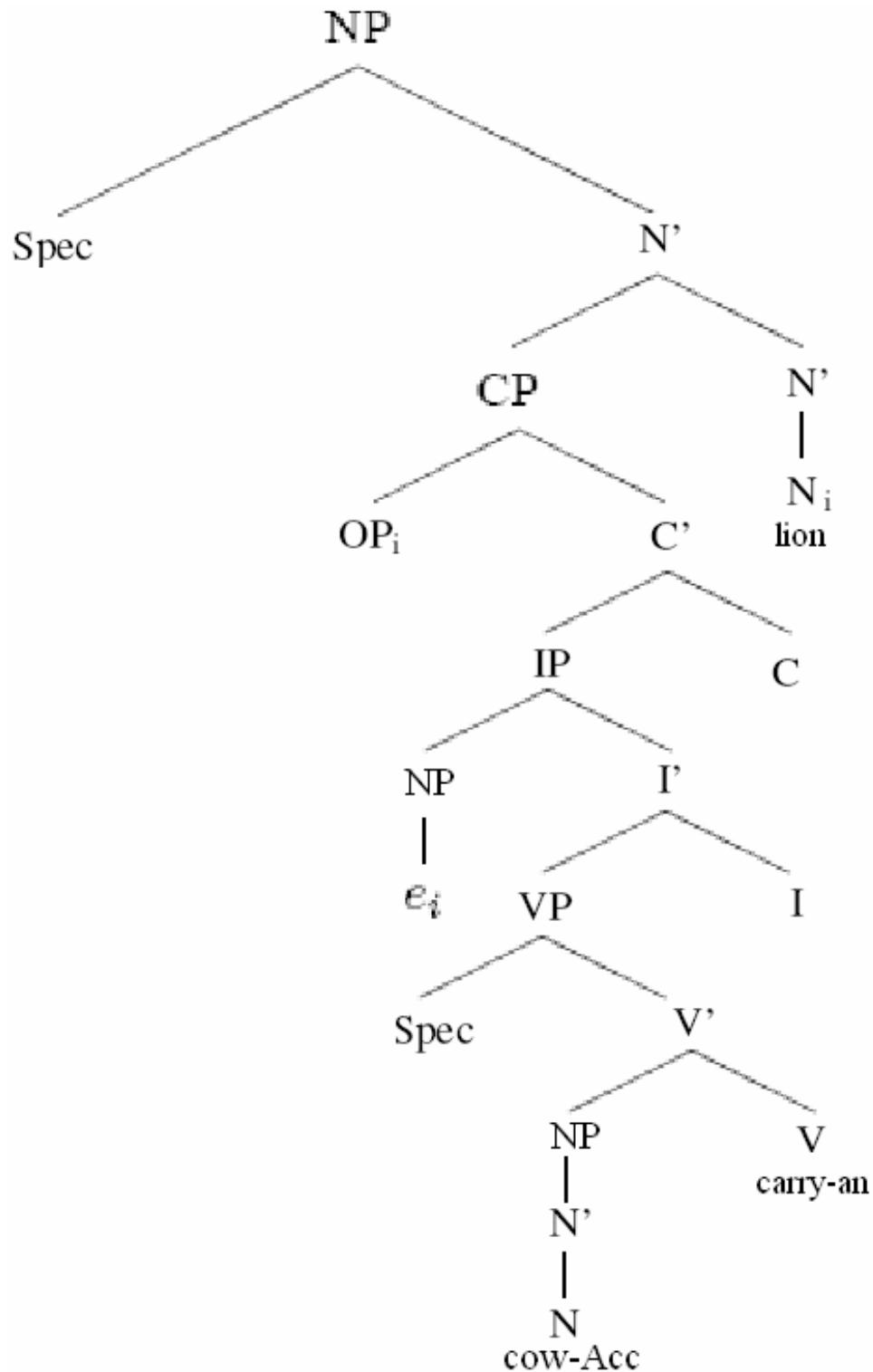
(12)   b.
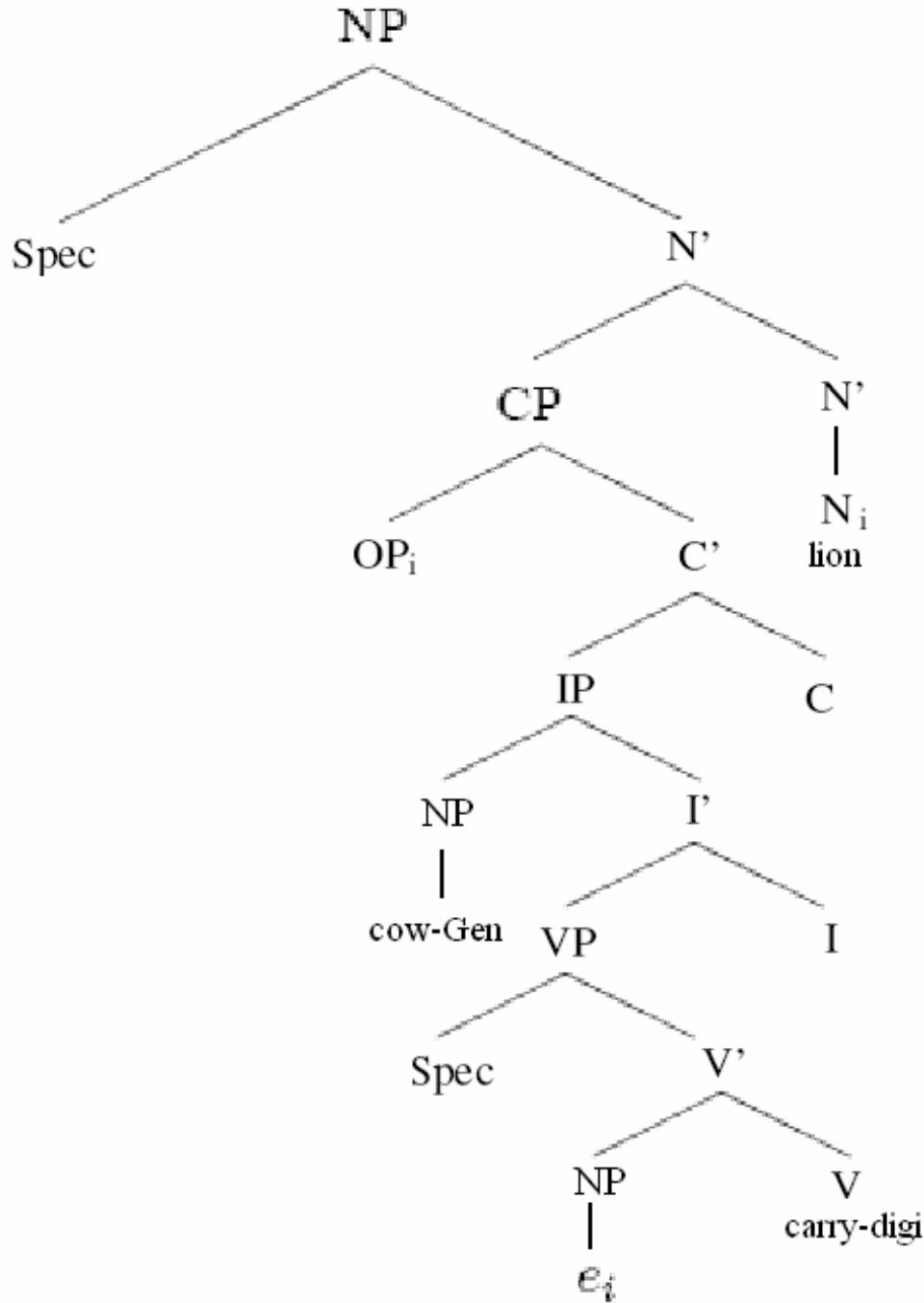
Note that this representation is according to the Operator Movement analysis of Chomsky

(1977). Although Turkish does not have any overt relative pronoun, it is assumed here that there is

an empty relative pronoun operator in [Spec, CP] which is syntactically associated with a gap in

the relative clause (Kornfilt, 2000b). The syntactic relation between the empty operator and the gap is illustrated by coindexation. Under the operator movement analysis, the gap e_i is a trace of the empty operator OP. Thus, according to the representations in (12a) and (12b) above, the operators which are base generated within the relative clause move to the Spec-CP position and bind their traces. In both representations, the relativized head is base generated in its surface position. Notice also that the syntactic relationship between the head noun and the relative clause CP is an adjunction relation.

However, this analysis is not the only possible analysis of Turkish relative clauses. The head-raising analysis of Kayne (1994) can also derive relative clauses in Turkish. For example, Kornfilt (2000a) argues that the process Kayne argued for English is also involved in the derivation of relative clauses of right-headed languages like Turkic languages. She suggests, however, that there is an additional step involved for languages like Turkish: The IP complement of C moves to the specifier position of the higher DP, and thus the latter movement yields pre-nominal modification.

However, there is an important reason why the operator movement analysis is preferred over the head raising approach in this paper. For one thing, the latter analysis results in a complementation structure with respect to its relation to the head. However, Turkish RCs are not complementation structures, but they are adjunction structures with respect to the head they modify. This is because the complementation analysis predicts that the head 'determiner' takes the whole CP of the RC as its complement (Kayne, 1994), and there is no definite determiner in Turkish that selects the CP as its complement (Underhill, 1976; Kornfilt, 1997).

An additional risk in choosing the head raising approach is one related to c-command: The additional movement of IP positions it higher than D, which, in turn, puts it outside the c-command

domain of D. If an RC is outside the c-command domain of D, then, according to Kayne, it should have a non-restrictive reading. However, as mentioned by Meral (2004), Turkish RCs have restrictive readings. This, in turn, means that they are not examples of complementation structure, so they cannot be treated under the head raising approach. (see Meral 2004 for a detailed discussion of this second problem with the head raising analysis of Turkish RCs.)

For these two main reasons, the operator movement analysis of Turkish RCs is preferred in this paper. However, it should be noted at this moment that no matter which of the two analyses is used, it includes "movement." In fact, languages in general do not strictly use either strategy in forming RCs (Aoun & Li, 2003). Kornfilt (2000b) discusses the availability of the two strategies in Turkish. She argues that the gap in the modifying domain of Turkish relative clauses is a bound variable arising from syntactic movement. She points out that the moved element can be either a null operator or the relative head. The core point, however, stays the same: 'Movement' is involved in either case.

In addition to "movement," another important point that can be witnessed in (11) and (12) is that case markers play an important role in the formation of Turkish relative clauses. In particular, the object of the subject relative clause is marked with the accusative case while the subject of the object relative clause is marked with the genitive case. Also, notice that the main verb in the relative clause is inflected with a participle suffix[9] (-*an* in subject relatives, and –*diği* in object relatives), which shows that the clause is modifying a noun. The head noun occurs to its right, Turkish being a head-final language. This issue of which participle suffix and which case to choose has been discussed extensively in the literature (eg. Underhill, 1972; Haig, 1997; Kornfilt,

---

[9] Note that these suffixes surface differently depending on vowel harmony, agreement and other phonological issues. Thus, throughout this paper, the subject RC participle might surface as –*en*, -*an*, -*yen* or –*yan* depending on its phonological environment, and the object RC participle might surface as -*dığı*, -*diği*, -*duğu*, -*düğü*.

2000a and 2000b), and the core point in these research has been that two different case markers and participal suffixes are used in subject versus object relative clauses.

However, as we have said above, the important thing here is that the LDH predicts direct object relatives will be easier while the SDH predicts subject relatives will be easier. This is because the *linear* distance between the head and the gap is shorter in direct object relatives (1 word) than in subject relatives (2 words) while the *structural* distance is shorter in subject relatives (2 nodes) than in direct object relatives (3 nodes).

2.2.2   Other attempts at disentangling the effects.

Clearly, the present research is not the first and only attempt to extricate the effects of the different hypotheses about the difficulty of various relative clause constructions. There has been some research to investigate this issue with other languages, too. However, the effects of the above three factors have never been disentangled. To my knowledge, in SLA literature, there have only been three distinguishable attempts which really tried to solve this question; however, all had their own problems:

First, Tarallo and Myhill (1983) attempted to investigate the problem by asking grammaticality judgment questions of their adult English speaking subjects in Chinese and Japanese, and they interpreted their results as proof for the LDH, claiming that their subjects were more inclined to accept direct object relatives than subject relatives. One problem with this study was that this preference on the part of the learners was apparent only for those direct object relatives which contain a resumptive pronoun, which are not normally acceptable in Chinese and Japanese (see O'Grady, Lee, & Choo for a short discussion of this problem). Another problem with this study, which escaped the attention of previous SLA research, was that the study did not

take the WDH into consideration although its results might simply be because of the WDH. That is, since Chinese direct object relatives have the canonical word order of Chinese (SVO), the WDH account also predicts that Chinese direct object relatives should be easier than Chinese subject relatives. To better understand this, examine the following data adapted from Hsiao and Gibson (2003). In (13a), there is a direct object relative clause that has the canonical SVO word order of Chinese whereas in (13b) there is a subject relative clause which has a non-canonical word order VOS:

(13)   a. fuhao yaoching __ de guanyan$_i$

        tycoon   invite   GEN   official
      "the official that the tycoon invited"

      b. __ yaoching fuhao de guanyan$_i$
         invite   tycoon GEN official
      "the official who invited the tycoon"

More recently, O'Grady, Lee, & Choo (2003) attempted to investigate this issue with a picture description task for Korean relatives. However, as with Tarallo and Myhill, they didn't take word order (WDH) into consideration. Although this is not really as big a problem in the case of Korean relatives, its effects are important for the SLA literature to disentangle the separate influence of the three theories. Another problem with O'Grady, Lee, & Choo's study is one to do with its methodology: All the questions they asked the learners have the verbs "to like" and "to see" such as "the woman who sees the man" and "the pig who likes the dog" with the difference only in the subjects and objects of the relative clauses, which might possibly have focused learners' attention too much into the tested feature: relative clauses.

Another such recent study that attempted to disentangle the effects of different possible theories about relative clauses was conducted by Hsiao & Gibson (2003) with L1 speakers of Chinese. Although this study is an all-inclusive one, it is not concerned with second language acquisition. Though most of its findings can nevertheless be applied to the area of second language acquisition, the study has some other problems, too. First of all, it has a similar problem to that of the previous two studies mentioned above: Although the study takes the WDH into consideration, in a language like Chinese, the researchers can't disentangle its effects from the effects of the other two theories. Therefore, the study is not conclusive at all in this respect. Second, the researchers accept Chinese *de* as a relative pronoun, which no other analyses of Chinese regard as a relative pronoun. (see Kayne,1994 for example). Clearly, then, the Chinese language, which has been investigated by two of the three distinguishable studies with the purpose of disentangling the effects that English cannot, is not the best choice to do so if not worse than choosing English.

To date, noone has investigated this matter for Turkish, in which each of the three different theories mentioned above makes a different prediction. In the next section, I describe an experimental study that I carried out in an attempt to find out whether L2 learners of Turkish have a preference for subject or object relative clauses.

3.0 METHODOLOGY

The learners completed three different tasks. The first was a picture-selection task testing students' comprehension of relative clauses. The second was again a picture-selection task, but assessing students' ability to process case markers. Finally, the last task was a proficiency task testing students' general proficiency in the Turkish language.

The reason for using picture-selection tasks was because the picture-selection task can help pick out students' sensitiveness to contrasts (their comprehension) even before those contrasts show up in students' own speech (their production), and it does so without taking surface 'mistakes' like slips of tongue into consideration. Also, 'comprehension processing' of relative clauses is the focus of the present research, and it is something to do with students' 'understanding' of these constructions, rather than their 'production.'

Three different groups of learners took these tasks. The first was composed of native speakers of English learning Turkish as a second language. The second contained native speakers of SOV languages (Japanese, Korean and Mongolian) learning Turkish as a second language. And the third was a comparison group composed of native speakers of Turkish. Each task and group is explained separately below in sections 3.1 and 3.2.

3.1   METHOD

3.1.1   Task 1.

In the first task, participants were given a leaflet in which each page contained a series of pictures (see Figure 1), and they were asked to mark the person or animal described on each page. The instructions were all in English, and the descriptions were uttered verbally by a native speaker and only once. There was a 10-second pause between the test items. The following text was used for instructions:

> Each page in this booklet has a series of three pictures. And each picture contains two
> persons/animals (a total of 6 figures). As you go through each page, you will hear the description
> of a person or animal in one of the three pictures. Your task will be to circle the person or animal
> in the description. In other words, you will need to mark the correct figure out of 6 different
> choices/figures in 3 different pictures. You will have 10 seconds for each page. Note that the
> same series of pictures will appear more than once asking different questions.

An example page from the booklet is given below:
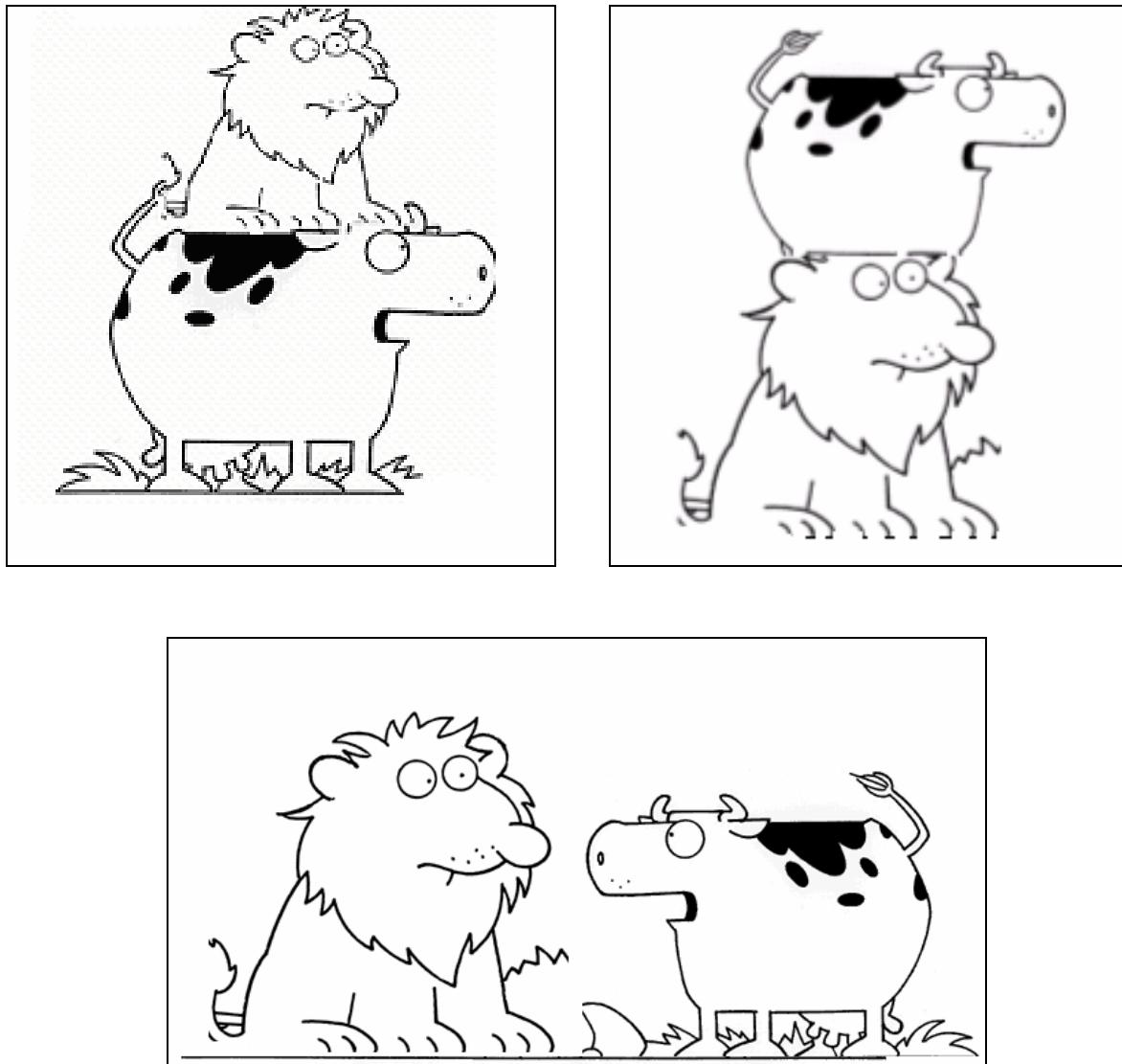
Figure 1. A sample page from the leaflet: "the lion that the cow carries" (See Appendix A for a complete list)

In Figure 1., "the lion that the cow carries" is described. If a student correctly understood relative clauses, he or she would mark the lion on the first picture upon hearing the sentence "Mark the lion that the cow carries." The two other lion figures in the two other pictures together with the three cow figures in each of the three pictures would all be wrong choices. Therefore, the student needs to choose the correct person/animal out of six choices. The purpose of the distractor picture (the third picture) where no action of carrying takes place is to spot responses in which participants

mark an individual mentioned in the native speaker's description without knowing that individual's role in the denoted action.

All in all, the test was composed of 10 subject relative clauses, 10 direct object relative clauses and 20 other distractor sentences. The distractor sentences were included so that the students could not predict that only their relative clause knowledge was being assessed. Moreover, the ordering of the pictures was varied so that the learners could not take advantage of the otherwise left-to-right order of the pictures on each page. Also, all the test items were composed of animate subjects and animate direct objects; thus, they were semantically reversible. This ensures that the participants can not guess the correct answer without grammatical knowledge to do so. This is consistent with research on sentence processing, which shows that animacy of the subject or object of a clause affects comprehension to a great extent (e.g. Grodner, Gibson, & Watson, 2005).

3.1.2 Task 2.

In addition to the above picture-selection task, which was used to assess students' comprehension of "relative clauses," there was also another task used to assess students' knowledge of "case markings." After all, as can be seen in 6a. and 6b. above, case markers play a crucial role in the formation of Turkish relative clauses. In particular, the object of the subject relative clause is marked with the accusative case while the subject of the object relative is marked with the genitive case. Therefore, this second task will serve to extricate the effects of case markers from those of the relative clause type.

This task was also in the form of picture-selection since we are aiming to measure learners' 'comprehension.' Again, as in the first task, participants were given a leaflet in which each page

contained three pictures (see Figure 2). Unlike the first task, however, they were not asked to circle

the correct person/animal; rather, they were asked to mark the picture that denoted the correct action.

The instructions were all in English, and the descriptions were uttered verbally by a native speaker

and only once. Again, as in the first task, there was a 10-second pause between the test items. The

instructions contained the following:

> - Each page in this booklet has a series of three pictures. And each picture describes a single
>
> action. As you go through each page, you will hear the description of that action. Your task will
>
> be to mark the picture in the description. You will have 10 seconds for each page.
>
> - Note that IF (and only if) a picture contains "an animal with a leash held by a human being," it
>
> means that that person "owns" the animal. On any page, it might be the case that some pictures
>
> have animals with leashes and some without. You need to treat the ones with leashes as owned by
>
> the person holding the leash and the ones without leashes as owned by noone.
>
> - Note also that the same series of pictures will appear more than once asking different questions.

All in all, the test was composed of 5 sentences testing the genitive case, 5 testing the

accusative case, and 15 other distractor sentences. An example series of pictures testing the

genitive case are given below:
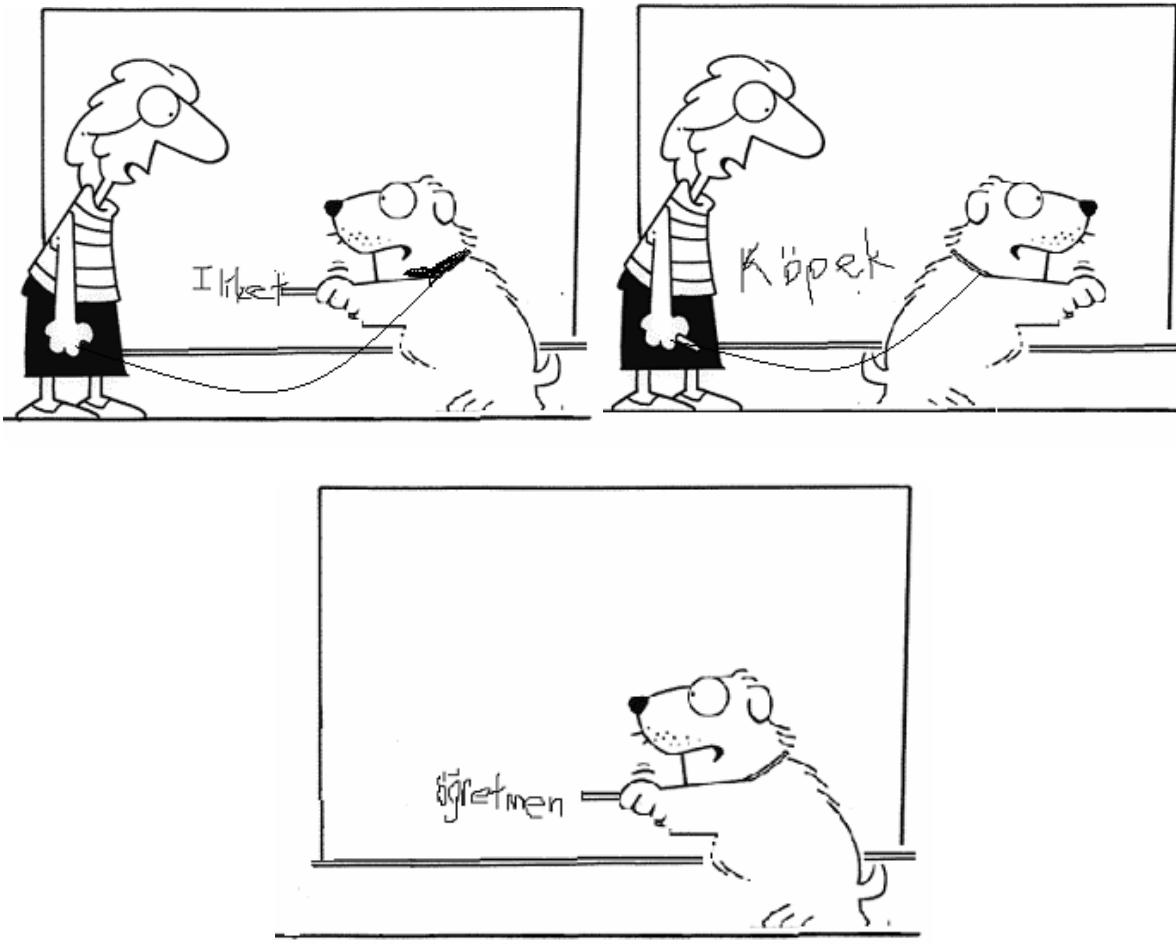
Figure 2. A sample page from the leaflet: "The teacher's dog writes (something)." (See Appendix B for a complete list)

In Figure 3., the sentence "The teacher's dog writes (something)." is described. If a student correctly understood the genitive case, he or she would mark the first picture. The two other pictures would be wrong choices. Therefore, the student needs to choose the correct picture out of three choices which are all challenging for one who does not have the adequate knowledge of the Turkish case system. For example, if the student wrongly interprets the genitive case above as accusative, then he or she would mark the third picture which is "The dog is writing "teacher" (*öğretmen*) (on the board)." And this big change in meaning is only because of a small change in case (the use of the genitive *–in* versus accusative *–i* on the word "teacher" (*öğretmen*). Similarly,

if the student did not correctly understand the genitive case, then he or she might also choose the second picture, which is "The teacher is writing "dog" (*köpek*) (on the board)." Therefore, all three pictures are equally possible choices for a student who has not yet perfectly acquired the Turkish case system.[10] These choices[11] are given in (9) below. Note how the difference in case markers can totally change the meaning of the sentence. The case markers are underlined:

    (14)   a. Öğretmen'<u>in</u> köpek yaziyor. = The teacher's dog is writing (something).

            b. Öğretmen köpek<u>i</u> yaziyor.   = The teacher is writing "dog." (on the board).

            c. Öğretmen<u>i</u> köpek yaziyor.   = The dog is writing "teacher." (on the board).

In short, by using this second task, we can understand if the learners' knowledge of genitives and accusatives differs. If so, then it can be claimed that the observed results of the task one are probably caused by the difference in students' knowledge of Turkish case markers rather than the relative clause type. If, however, students do not show any significant difference in terms of their competence of accusative and genitive cases, then it can be assumed that the observed results are not because of the influence of case markings.

3.1.3 Task 3.

In addition to the two tasks outlined above, a third task, a proficiency test, was used in the study. This test serves two main purposes: First, it helps us make sure that any observed differences among learners' scores in processing relative clauses are not simply a reflection of their proficiency level. Second, since it contains the key vocabulary used in the first two tasks, it helps us understand whether the observed results are influenced by learners' lack of knowledge of those

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[10] Moreover, since the task also included distractor sentences that had scrambled (non-SOV) word order, 9.c also becomes highly possible despite its non-canonical word-order.

[11] All the verbs used in this task are transitive since only with transitive verbs multiple meanings are possible.

vocabulary items. If, for example, a learner does not know the difference between a "lion" and a "cow," then there is no point in trying to get insight into that learner's processing mechanisms by asking him/her to mark "the lion that carries the cow." The proficiency test used in the study is given in Appendix C.

3.2   PARTICIPANTS

There were three different groups of participants in the study. The first group was composed of 20 English-speaking learners of Turkish at the intermediate level. The second group was composed of 7 intermediate learners of Turkish who are NSs of SOV languages. In particular, this group included 4 Korean, 2 Japanese and 1 Mongolian learners of Turkish. This second group helps us see the effect of the 'word order' in students' native language versus the target language (Turkish). As for the third group, it was composed of 10 NSs of Turkish, serving as a comparison group. The three groups are shown in the table below:

Table 1. Participants

Group1 Intermediate	Group 2 Intermediate	Group 3 Intermediate
20 NSs of English	7 NSs of SOV Languages	10 NSs of Turkish

The learners in Group 1 and 2 were students taking Turkish as a foreign language classes at the Georgetown University, the University of Chicago and the University of Pittsburgh. And the native speakers in Group 3 were graduate students studying at the University of Pittsburgh.

4.0   RESULTS

As predicted, Turkish NSs, <u>Group 3</u>, did not have any serious difficulties with the test items responding correctly 96% of the time for subject RCs and 97% of the time for direct object RCs. The high achievement of this control group showed that the test items were correctly formulated.

As for <u>Group 1</u>, the intermediate L1 English group, they performed much better on direct object relatives than on subject relatives with the scores of 80.5% correct for direct object relatives and 67 % correct for subject relatives (See Table 2). This contrast is a clear indication that direct object relatives in Turkish are easier to process than subject relatives:

Table 2. Results for the L1 English Intermediate learners of Turkish

Relative Clause Type	Correct-Percentage	Reversal Errors	Head Errors[12]
Subject	134/200 = 67%	44/200 = 22%	14/200 = 7%
Direct Object	161/200 = 80.5%	19/200 = 9.5%	12/200 = 6%

In addition to these results, when we look further at the errors where a structure of one type was miscomprehended as a structure of another type (reversal errors), we see that subject relatives were miscomprehended as object relatives 44 times while object relatives were miscomprehended as subject relatives only 19 times. This, again, supports the fact that direct object relatives are easier than subject relatives. Furthermore, while most of the errors with subject relative clauses

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[12] These are cases where postnominal rather than prenominal positioning of relative clauses was employed.

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are reversal errors (44 out of 66), this is not the case with object relatives (where only 19 out of 39 are reversal errors). This, again, shows a clear tendency on the part of the learners to interpret a clause as an object relative rather than a subject relative.

As for the SOV group, <u>Group 2</u>, the results are given in Table 3 below. With these learners too, we see the same preferences as L1 English learners of Turkish although the difference between successful comprehension of object relatives and subject relatives is not definitely as big here as it was for Group 1. In particular, these learners had 88.5% correct for object relative clauses and 80% correct for subject relative clauses:

Table 3. Results for the L1 Korean & Japanese Intermediate learners of Turkish

Relative Clause Type	Correct-Percentage	Reversal Errors	Head Errors
Subject	56/70 = 80%	12/70 = 17%	0/80 = 0%
Direct Object	62/70 = 88.5%	6/70 = 8.5%	2/80 = 2.5%

We see the same preferences also when we look at the types of errors: For example, with this group too, we observe that subject relatives were miscomprehended as direct object relatives twice more often than the other way around. This, again, shows a preference for processing a clause as an object RC rather than a subject RC. These findings, when compared with those of Group 1, suggest that whether the participants' native language is typologically SVO or SOV has little, if any, effect on the observed results.

One important point to note at this moment is that the reason why the gap between subject and object RCs is smaller with Group 2 might actually be related to the fact that the learners in this group had higher levels of proficiency. In other words, since they are more highly proficient than the learners in Group 1, they do well in both occasions, which causes the gap between the subject and object RCs to be smaller. In particular, Group 1 had an average of 67.5% in the proficiency

exam while Group 2 had 77%. This shows clearly that Group 2 was much more proficient than Group 1.

To analyze all these results, and to test the main and interactive effects of "RC type" (subject vs. object), "first language" and "proficiency," a three-way ANOVA was performed. In the analysis, first language and proficiency level were between-subjects factors, because they divide students into two groups. This is because each student is only a native speaker of English or an SOV language, not both, and because each student is assigned to either one of the low and high proficiency groups, not both (proficiency divided at 80). On the other hand, RC type was a within-subjects factor, because all students were tested on both subject and object relative clauses:

Table 4. Three-way ANOVA: Type of RC by L1 by Proficiency Level

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Between Subjects Effects					
L1	273.841	1	273.841	.546	.467
Proficiency Level	46.430	1	46.430	.093	.764
L1 by proficiency level	28.663	1	28.663	.057	.813
Between error	11526.667	23	501.159		
Within Subjects Effects					
Type of RC	1104.588	1	1104.588	5.684	.026
Type of RC by L1	6.618	1	6.618	.034	.855
Type of RC by Proficiency level	55.349	1	55.349	.285	.589
Type of RC by L1 by proficiency level	32.507	1	32.507	.167	.686
Within error	4469.524	23	194.327		

From the table above, we see that there is a significant difference in performance between subject and object RCs, $F(1,23)=5.684$, p=.026. However, this difference is *not* because of L1 or proficiency level or the combination of the two. After all, there is no significant relationship between "the difference in performance on subject and object RCs" and "L1," $F(1,23)=.034$, p=.855; "proficiency level," $F(1,23)=.285$, p=.589; and "the combination of L1 and proficiency level," $F(1,23)=.167$, p=.686.

So if students' first language or their proficiency level does not affect the difference in performance on subject and object RCs, then what can be the reason? One thing that comes to mind is that the results might be due to differences in processing case markers. Learners, after all, might be processing the genitive case better than the accusative case since it is (possibly) more salient than the accusative. (Remember that genitive case is used in object RCs while accusative case is used in subject RCs.) The results of the Task 2 show that this is clearly not the case:

Table 5. Results of the Task 2 for Group 1 and Group 2

Case Marker	Group 1: Correct	Group 2: Correct
Accusative	91/100 = 91%	34/35 = 97%
Genitive	87/100 = 87%	33/35 = 94%

A dependent samples t-test was performed in order to determine if the difference was significant. The t-statistic was not significant, $t(1, 19)=1.097$, $p=.287$ for Group 1, and $t(1, 6)=-1.441$, $p=.200$ for Group 2. In other words, there was no significant difference in how the accusative and genitive case markers were processed by the learners.

These results suggest that the genitive and accusative cases are known equally, so object RCs are not processed more easily because the learners know the accusative morphology better. This means that the accusative and genitive case markers are about the same in terms of providing cues into whether a relative clause construction is a subject or an object RC. This, in turn, supports our earlier finding that subject relative clauses in Turkish are more difficult to process than object relative clauses.

5.0   DISCUSSION

The findings of the present study demonstrate that subject relative clauses are more difficult than object relative clauses in Turkish, contrary to the results in the literature for the same construction in other languages. Two points are especially important here:

First, higher difficulty of subject RCs for the learners of Turkish indicate that generalizations of ease based on Keenan & Comrie's (1977) NPAH are mistaken. That is, the fact that subject RCs are higher in Keenan & Comrie's hierarchy than direct object RCs does not necessarily mean that subject RCs should be easier than direct object RCs. In this respect, the results of this study clearly contradict the findings of researchers like Gass (1979), who claimed - with data on a variety of languages - that language learners' proficiency of relative clauses could be predicted on the basis of the NPAH.

This requires asking a larger question: Are interlanguages really natural languages as second language researchers have usually assumed? The answer depends on whether or not we accept NPAH as a universal; this decision is beyond the scope of this paper. However, assuming the correctness of NPAH as a *universal*, we would *not* expect learners of Turkish to comprehend direct object relatives much better than subject relatives, for to do so would suggest the violation of a language universal, which, according to Gass (2000) and White (2003), would suggest that

language learner languages (interlanguages) are not natural languages. The results of this study seem to be in this direction.[13]

A second important point the present study raises is that the Linear Distance Hypothesis (LDH) is the principal determinant of difficulty in relative clause constructions. Since, in Turkish, the *linear* distance between the head and the gap is shorter in direct object relatives (1 word) than in subject relatives (2 words) while the *structural* distance is shorter in subject relatives (2 nodes) than in direct object relatives (3 nodes), we could disentangle the effects of the LDH and the SDH while at the same time keeping the effects of the WDH to a great extent constant. The results revealed that object relatives were easier than subject relatives, which, in turn, suggested that the predictions of the LDH, rather than the SDH hold true in determining the difficulty of relative clauses. Note, however, that the version of the LDH that predicted the results of the current study is the one where one counts the words between the head and the gap, not between the null operator and the gap.

Note also that the mere fact of being able to reject a counterargument (in this case SDH) does not necessarily mean that the other argument (in this case LDH) wins. That is, although the findings of this study strongly suggest that the LDH is superior to the SDH, there might be some other factors, which are yet unknown to linguists, determining the difficulty of relative clauses. Similarly, caution is called in interpreting the fact that the WDH (canonical word order) effects have been kept constant. There are two reasons for this: First, although these effects have been controlled to a great extent (since neither subject nor object RCs have the canonical word order of Turkish), they haven't been controlled completely since it is possible that, in Turkish, the word order of object RCs (SVO) might be more frequent than that of subject RCs (OVS), or the other

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[13] This issue will be dealt with later in Section 5.2.

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way around. Second, in this study, controlling the effects of the WDH helped unconfound its effects from the effects of the LDH versus the SDH and thus helped determine the LDH's priority over the SDH. However, this did not help conclude that the WDH effects are less important than the LDH effects in determining the difficulty of relative clauses in other languages. In Turkish, it is true that the WDH effects are not probably important, for neither subject nor object relative clauses are formulated according to the canonical SVO word order of Turkish. However, in languages like English, the WDH might be effective together with the LDH since English subject relatives – unlike object relatives – show the canonical word order of English. In this study, the effects of the LDH have been disentangled from those of the SDH. As for disentangling the effects of the WDH from those of the LDH, future research is needed in languages which make different predictions based on the WDH and the LDH.

Except for Tarallo & Myhill (1977) and Hsiao & Gibson's (2003) studies on Chinese relatives, to my knowledge, no other research in the literature has found that direct object relatives are easier than subject relatives. The problems with Tarallo & Myhill and Hsiao & Gibson's studies have already been mentioned above. Therefore, the findings of the present study on the L2 acquisition of Turkish relative clauses, which has not previously been examined, gain much more importance than just revealing the priority of the LDH over the SDH. Thus, some possible counterarguments need to be addressed here. In fact, four different counterarguments might be raised to claim that the results of this study are not actually the reflection of the LDH, but that of some other confounding variables. Below, I discuss these counterarguments together with my opinions of why they can't be valid:

5.1   COUNTERARGUMENTS

5.1.1   Instruction Effects.

First, it might be claimed that the preference for object relative clauses is because of an instruction effect. However, this is probably not the case, because neither the instruction nor the materials favored object relatives. In fact, if one type of relatives were favored, that was subject relatives since, in all cases, they had been taught a few days before the object relatives, meaning that the students had probably more input to subject relatives than to object relatives.

5.1.2   Transfer Effects.

Second, it might be claimed that the preference for object relatives is simply because of transfer effects. Since the word order in Turkish object relatives is SVO in contrast to the OVS word order of subject relatives, it might be stated that the English NSs might simply have transferred from the canonical word order of English, which is SVO. This kind of a transfer from the L1 canonical word order rather than from the L1 relative clause word order is a possible transfer strategy in parsing relative clauses (Juffs, 1998). However, in this study, there is an important reason to reject such an argument: Namely, the participants in Group 2, whose native languages are typologically SOV, also had most of their errors on subject relatives rather than on direct object relatives. In fact, they had an easier time with direct object relatives than the participants in Group 1 did, suggesting that Turkish direct object relatives are easier even for speakers of SOV languages where the canonical word order is not the same as the word order in Turkish object relatives.

5.1.3   Case Markers.

Third, it might be claimed that the results are related to a preference in the processing of case markers. Because the subject relative clause requires the accusative case marker -i on "inek" (see (11a)) while the object relative clause requires the genitive case marker -in (see (11b)), it might be suggested that the learners were better on object relatives simply because they were better at processing the genitive case marker -in. This is clearly not the case since, as the results of Task 2 indicated, there is no significant difference in the way accusative and genitive case markers were processed.

5.1.4   Testing Items.

Fourth and finally, the results might be attributed to issues with the testing items. It can be argued, for example, that the students did not have the necessary vocabulary to perform well on subject relative clauses. Similarly, it might also be argued that the pictures were more challenging in the case of subject relative clauses than of object relative clauses. Clearly, neither of these arguments makes sense because of the very obvious fact that exactly the same vocabulary items and the same pictures were used in both subject and object RCs. So if a vocabulary item or a certain picture is causing learners to do badly on one subject RC, by the same logic, it should lead to the same result for the object version of that RC.

What is more, the nouns such as 'lion,' 'cow,' 'dog,' 'teacher,' etc. were all tested in the Part I.B. of the proficiency test (Task 3), and no student got any of those nouns wrong. In other words, they did 100% correct in that part. This shows that learners' possible lack of knowledge of the nouns used in the study cannot be used as an argument against the results on the study. The

same thing is true of the verbs used (eg. carry, write, chase). Although the students did have some

mistakes on such verbs on the related part of the proficiency exam (Part I.A), this lack of

knowledge did not cause them to do wrong in the test items. In fact, it seems from the results that

even when they didn't know the meaning of a specific verb, they could guess it from the context.

This point is obvious from the fact that, there were only 5 verb errors[14] made by the students all

through the test. What is more, three of them were made by the same student. So, in short, the

results cannot be ascribed to learners' differential proficiency on vocabulary items.

5.2   OTHER POSSIBLE ARGUMENTS/IMPLICATIONS

Now that we have pointed out that such confounding variables as instruction, case markers and

testing items cannot be the reason for the results of the present study, we will discuss, in this

section some other more likely explanations:

5.2.1   Interlanguages are not natural languages.

We have seen in this study that an implicational universal, the NPAH, does not hold true when it

comes to the acquisition of Turkish as a second language. This result gives us enough grounds to

believe in a number of possible radical explanations. First, it might be that language learner

languages (interlanguages) are not natural languages since the language learners in this study do

not seem to be in line with language universals. Or it might be that the whole application of

language universals to second language acquisition is a big fallacy. These two possible

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[14] A verb error is when a student chooses, for example, a person/animal in the third picture in Figure 1 regardless of
the person/animal's role in the denoted action.

conclusions seem to be quite possible given that Turkish is a natural language, and that a language universal that has been found to be quite strong fails in the case of Turkish as a second language. We will come back to this argument in section 5.2.3.; let's first see a similar argument:

5.2.2 L1 and L2 processing are fundamentally different.

Given that the findings of the present study indicate that subject RCs in second language Turkish are more difficult to process than object RCs, and that this is contrary to the findings in the literature for the same construction in other languages, one possible explanation would be to suggest that L1 and L2 language processing are fundamentally different. On the surface, this argument looks quite sound because of two main reasons: First, it would be in line with the findings of comparative research on L1 and L2 acquisition, where L2 processing has been found to be quite different from L1 processing (eg. Clahsen and Felser, 2006; Clahsen and Muysken, 1986). For example, in their comparative study of L1 child, L1 adult and L2 adult processing, Clahsen and Felser (2006) found that in L2 sentence processing, nonnative comprehenders underuse syntactic information during parsing, while being guided by lexical-semantic and pragmatic information to the same extent as adult L1 speakers. Based on these findings, they propose a "shallow structure hypothesis" which suggests that the sentential representations adult L2 learners compute for comprehension contain less syntactic detail than those of native speakers.

This very fact makes this argument seem to look even more likely to be true since our results in the present study showed that the *Linear* Distance Hypothesis, but not the *Structural* Distance Hypothesis, was responsible for the results. Thus, it might be that these results were

because our participants were guided by lexical-semantic cues during parsing in the same way as native speakers but "less so" by *syntactic* information since syntactic representations adult L2 learners compute during comprehension are less detailed and shallower than those of L1 speakers. As I said above, this argument seems to be quite strong on the surface. However, there is an important factor to consider before accepting that it holds true for the findings of the present study: L1 acquisition of Turkish RCs. That is, unless one can prove that L1 acquisition of Turkish subject and object RCs are different from L2 acquisition of the same structures, it wouldn't be safe to attribute the results of the present study to the possibility that L1 and L2 processing are fundamentally different.

5.2.3   NPAH is not a universal.

So far, we have proposed two main possibilities for the results of this study: Either interlanguages are not natural languages (or the application of language universals to the area of SLA is mistaken) or it is just that L1 and L2 processing are fundamentally different. In order for us to be able to accept either of these arguments, we need to be able to indicate that L1 acquisition of Turkish RCs differs from the results of the present study.

However, a study conducted by Ekmekci (1990) on the acquisition of relative clauses by 100 Turkish children shows that the opposite is actually the case! In fact, in Ekmekci's study, the subjects performed much better, at imitation level, at object RCs than at subject RCs. In particular, the accuracy of the three-year old Turkish children in object RCs was 63% as opposed to their 57% accuracy in subject RCs. Similarly, four-year olds had 72% accuracy in object RCs and 57% in subject RCs, and five-year olds had 90% in object relatives versus 80% in subject relatives. Finally, six-year-old children had no problem with any of the sentences. There was a

100 percent success in their imitation for each construction group. Ekmekci interprets these results as an indication of the fact that it is after four that children show a significant progress towards subject relativization, and that subject RCs are acquired earlier than object RCs.

It would of course be better if there were other L1 studies on the subject/object asymmetry of Turkish RCs that use methods other than imitation. In the absence of such research, we will use Ekmekci's study as an indication that Turkish subject RCs are more difficult in L1 acquisition, too. At least, there is no research claiming the opposite for Turkish L1 acquirers.

This means that the results of the present study cannot simply be attributed to the possibility that L1 and L2 processing are fundamentally different. Nor can they be attributed to the alternative possibility that language universals do not hold true for SLA learners since a universal is not a universal if it turns out to be incorrect for one language. It seems from Ekmekci's study that, just like the Turkish L2 acquirers in the present study, Turkish L1 acquirers also have an easier time with subject RCs. This gives us enough grounds to believe in the possibility that NPAH is not actually an "implicational universal." Rather, it must be an "implicational tendency" given that there is at least one language, Turkish, that it cannot account for.

A linguistic universal, whether it is theoretical or observational, is an explicit or implicit hypothesis about the workings of the language faculty. On the other hand, a tendency or statistical statement such as "90% of all languages are…" is less interesting even if it were true. This is because the observed percentage could be due to anything like sampling issues, which Odden (2003) claims to have always been the case. So does the present study indicate the end of an implicational universal, NPAH, then? This interpretation looks quite possible given that the

previous two interpretations do not really account for the results of the present study. However, before arriving at such a conclusion, one more possibility should be thought of: Are Turkish relative clauses really relative clauses?

5.2.4   Turkish RCs are not really RCs.

Given the results of the present study and the above discussion, it seems that the NPAH cannot account for Turkish relative clauses. If we don't want to discard the NPAH as a universal, the only other option that remains is to discard Turkish relative clauses as real relative clauses.

So maybe, as opposed to what theoretical linguists such as Comrie (1989) and Kornfilt (2000a and 2000b) have always claimed, Turkish relative clauses are not really relative clauses, and that they do not have any gaps, movement, etc., but they are just nominalizing constructions. This possibility seems more logical than the previous ones given that it is difficult to give up with a whole big theory of language universals based only on data from one language or to claim that language learner Turkish is not really a natural language. Moreover, the same argument has already been proposed for similar languages like Japanese and Korean (eg. Murasugi, 2000).

This is a very highly possible conclusion to be drawn from the present study, and should further be investigated by theoretical linguists, who surprisingly seem to agree that Turkish RCs are real RCs.

Thus, it is useful to show here a few points about Turkish relative clauses that make them more like nominalizing constructions rather than relative clauses. First, although they are called relative clauses, in terms of syntactic structure, Turkish relative clauses are considerably different from English relative clauses. For one thing, the verb forms *taşıyan* (for subject RCs)

and *taşıdığı* (for object RCs) exemplified in (11a) and (11b) are non-finite forms of the verb *taşı*. Thus, a literal translation of the RCs in (11a) and (11b) would be the following:

(15)   a. "the cow carrying lion"

b. "the by cow carried lion" or "the lion of the cow's carrying"

Moreover, since these are non-finite, they don't carry tense, either. Thus, an RC as in (11b) *inekin taşıdığı aslan* can either mean "the lion that the cow carries" or "the lion that the cow carried" or even "the lion that the cow will carry" depending on the context. This shows that, in terms of syntactic structure, they are indeed more like nominalizing constructions than relative clauses.

Why, then, do linguists classify them as relative clauses? Perhaps the biggest reason, mentioned in Comrie (1989), is that, in restrictive interpretation, Turkish RCs are like English RCs since there is a head noun as in *aslan* 'lion,' and the RC restricts the potential reference of the head by showing us which particular lion (eg. the one that the cow carries) is in question. In other words, if a *functional* definition of relative clauses is adopted, then Turkish RCs are also relative clause constructions, and the distinction between finite and non-finite relative clauses become a typological parameter.

However, it seems from the present research that a functional definition of RC constructions might not be adequate since it does not account for processing issues. In other words, although Turkish RCs are similar to English RCs from a functional point of view, they are different from a syntactic and processing point of view. So far, Turkish RCs have been considered as real RC constructions primarily because they are functionally like English RCs (although they were known to be syntactically different). The present research has cast one more side to the discussion: Turkish RCs are different not only in terms of syntax, but also in terms of

processing. The question is, then, whether to look at functional considerations only or syntactic plus processing considerations while defining a construction as a relative clause.

Another interesting fact about the Turkish RCs that makes them different from their English counterparts can be seen by looking at other types of RCs than subject and direct object, namely indirect object, object of a postposition, and genitive: While indirect object RCs can be constructed with the object RC marker –diğ i, object of a postposition and genitive RCs can be constructed by the subject RC marker –an. This point is crucial: The fact that object of a postposition and genitive RCs can be constructed by the subject RC marker –an means that the head of the RC is *not* necessarily the subject when this morpheme is used:

(16)　　a. <u>Indirect Object</u>:

　　　　[inek-in [__ yemek ver-diğ i]] aslan
　　　　　cow-GEN　　food　give　RC s.　lion
　　　　"the lion that the cow gives food to"

(17)　　b. <u>Object of a postposition</u>:

　　　　[[__ yanında] inek dur-an] aslan
　　　　　　　next to　　cow　stay RCs　lion
　　　　"the lion next to which stays a cow"

(18)　　c. <u>Genitive</u>:

　　　　[[__ arkadaş-ı] konuş-an] aslan
　　　　　　　friend-pos　speak　RCs　lion
　　　　"the lion whose friend speaks"

This, in turn, makes the Turkish RC constructions even more like normal nominalizing morphemes since the choice of the morpheme does not really depend on whether the head of the RC is a subject or not. It seems, instead, that it depends more on semantics. In other words, the morpheme that we think as the subject RC marker might just be the Turkish equivalent of –ing

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while the morpheme that we think as the object RC marker might be the Turkish equivalent of

–*ed*. Given this, it is not surprising that the constructions "the cow carry*ing* lion" (subject RCs)

and "the by cow carri*ed* lion" (object RCs) require different morphemes on the verb and different

cases on the non-head noun.

6.0 CONCLUSION

The present study has demonstrated that learners of Turkish as a foreign language find subject relative clauses more difficult to comprehend than direct object relatives, contrary to the results in the literature for the same construction in other languages. These results are not predicted by the Structural Distance Hypothesis (SDH). Given that the effects of instruction, transfer and case markers are not also likely, and that the effects of the Word Order Difference Hypothesis (WDH) are largely controlled, the results of the present study suggest that the Linear Distance Hypothesis (LDH) is the principal determinant of difficulty in relative clause constructions for second language learners.

We can now gain some insight into the nature of the L2 processor which is not yet clearly known to SLA research (DeKeyser, Salaberry, Robinson, Harrington, 2002). It seems that L2 learners have representations in which the L2 processor is sensitive to the linear distance between the head and the gap in gap-filling constructions like relative clauses. This means that the form in which the head is linearly closer to the gap is easier to process for L2 learners. This is true whether or not that form is the more unmarked form of the two constructions.

This, in turn, suggests that generalizations of ease based on the NPAH are mistaken. As explained above, this is probably not because language learner languages are not actually natural languages or because the whole theory about the application of language universals in second language acquisition is problematic. Similarly, it is not because first and second language

processing is different, either. Rather, the reason must either be that NPAH, as a universal, is not actually a universal or, more possibly, that Turkish relative clauses are perhaps not really relative clauses as in English. Maybe they are just the translation equivalents of English RCs. Whatever the reason for the results of the present study is, it obviously has vital implications for a theory of second language acquisition, and should further be investigated.

APPENDIX A

BOOKLET USED IN TASK 1

The booklet used in Task 1 is given below. The tested series of pictures were pages 48, 50, 53, 55, 57, 59, 60, 62, 64, 65, 67, 69, 71, 73, 75, 77, 78, 80, 82, 85.

Task 1:

Each page in this booklet has a series of three pictures. And each picture contains two persons/animals (a total of 6 figures). As you go through each page, you will hear the description of a person or animal in one of the three pictures. Your task will be to circle the person or animal in the description. In other words, you will need to mark the correct figure out of 6 different choices/figures in 3 different pictures. You will have 10 seconds for each page. Note that the same series of pictures will appear more than once asking different questions.

"Mark the rabbit in the box!" (Kutudaki tavşanı işaretle!)
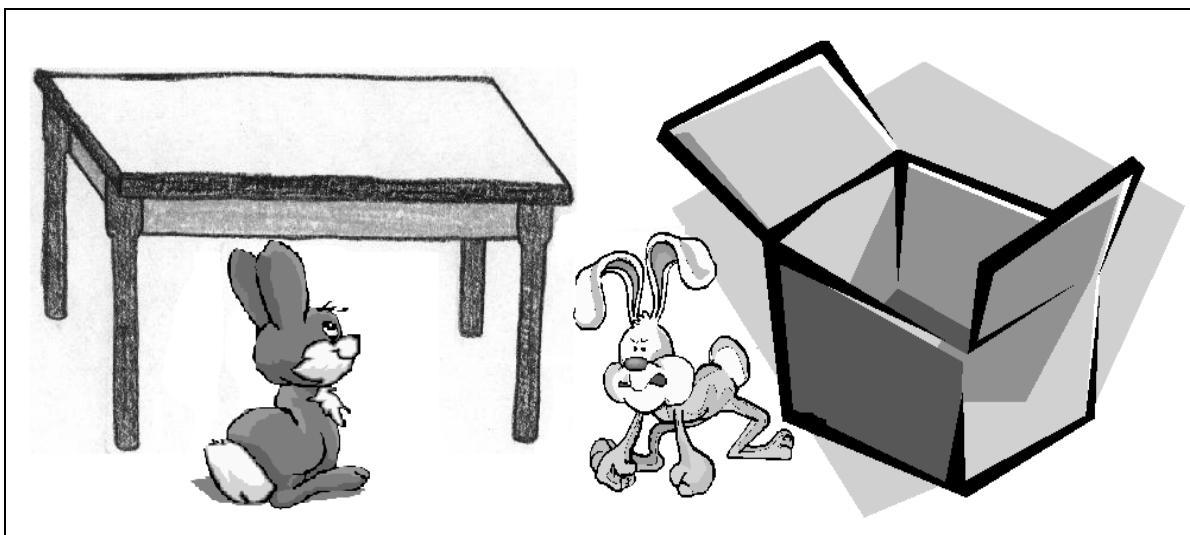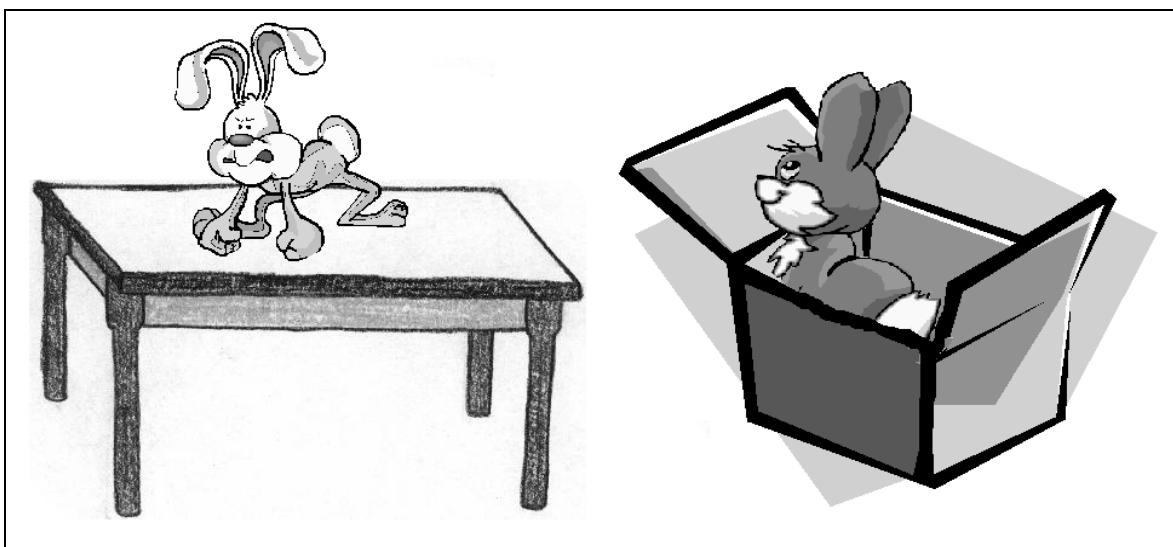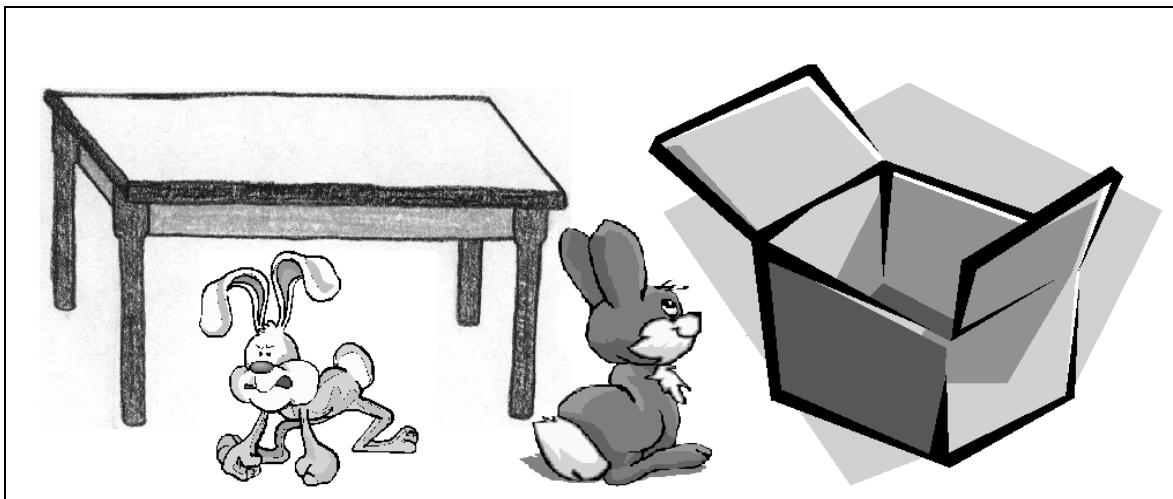
"Mark the woman that sees the man!" (Adamı gören kadını işaretle!)
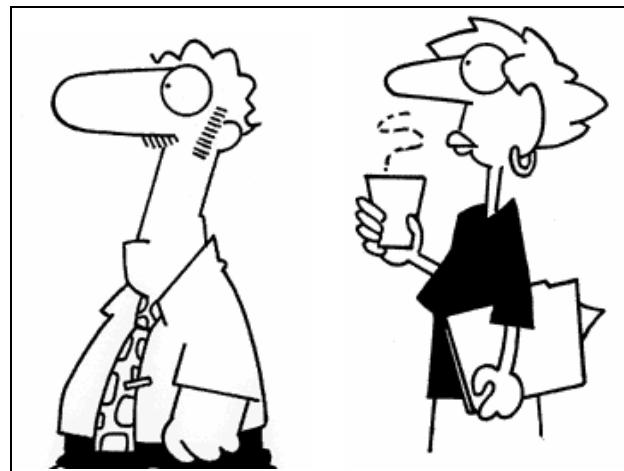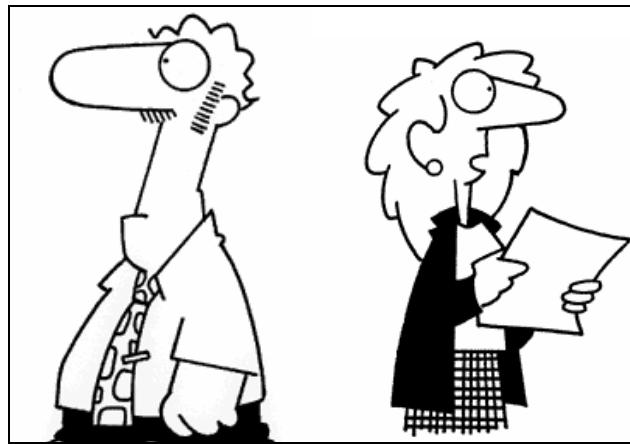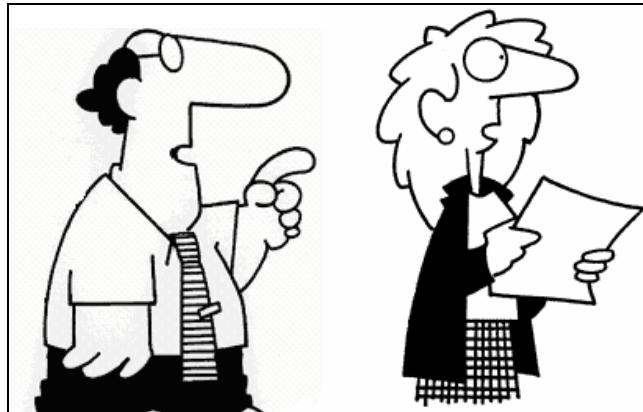
"Mark the lying squirrel!" (Yatan hayvanı işaretle!)
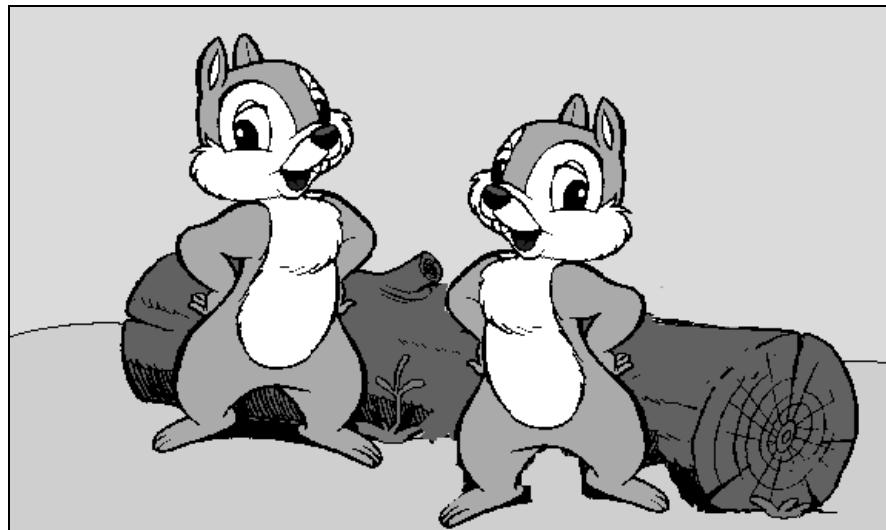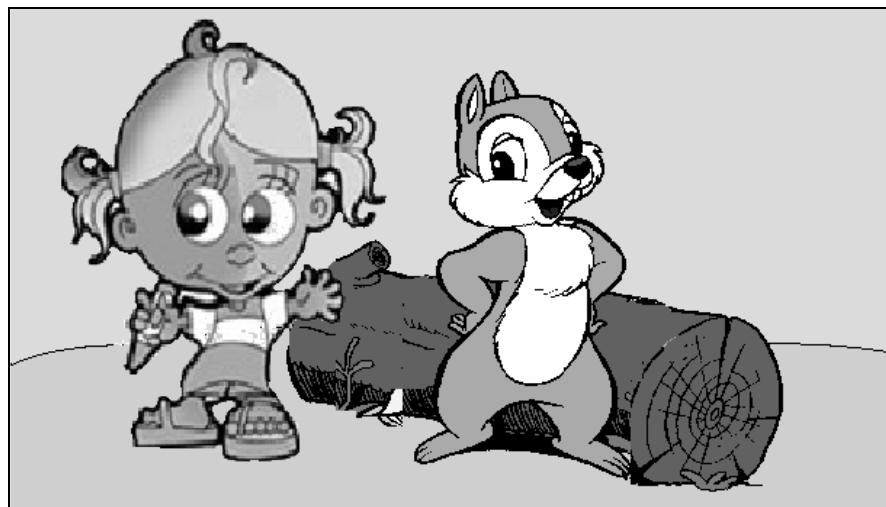
"Mark the man that chases the woman!" (Kadını kovalayan adamı işaretle!)

"Mark the sitting man!" (Oturan adamı işaretle!)
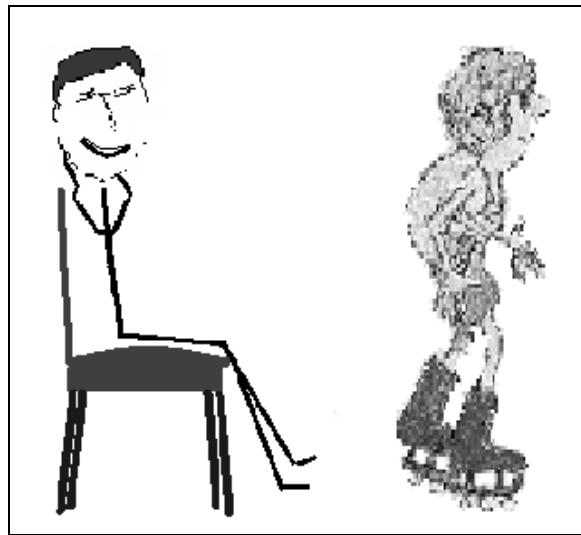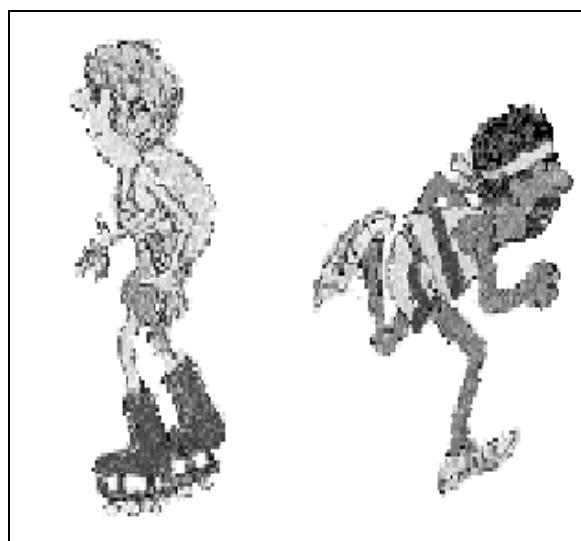
"Mark the glass under the table!" (Masanın altındaki bardağı işaretle!)
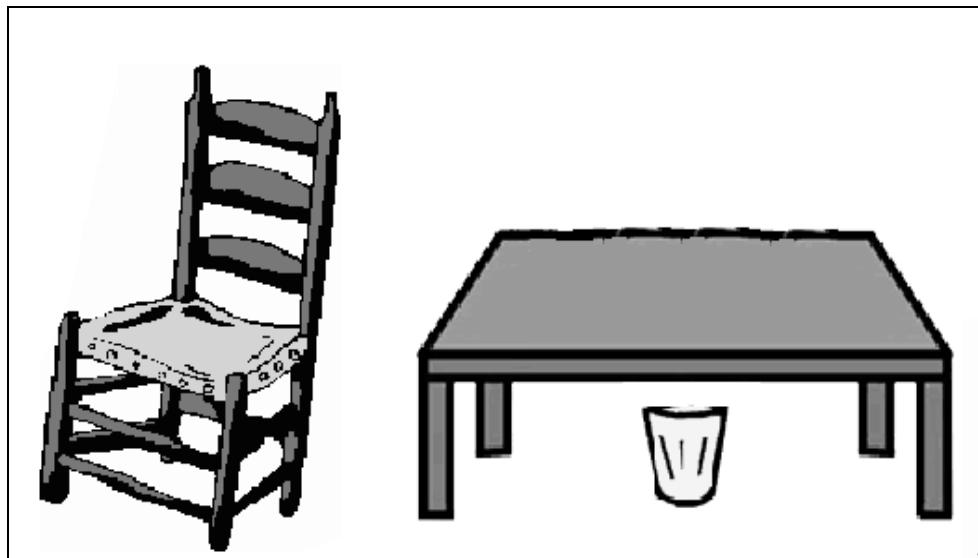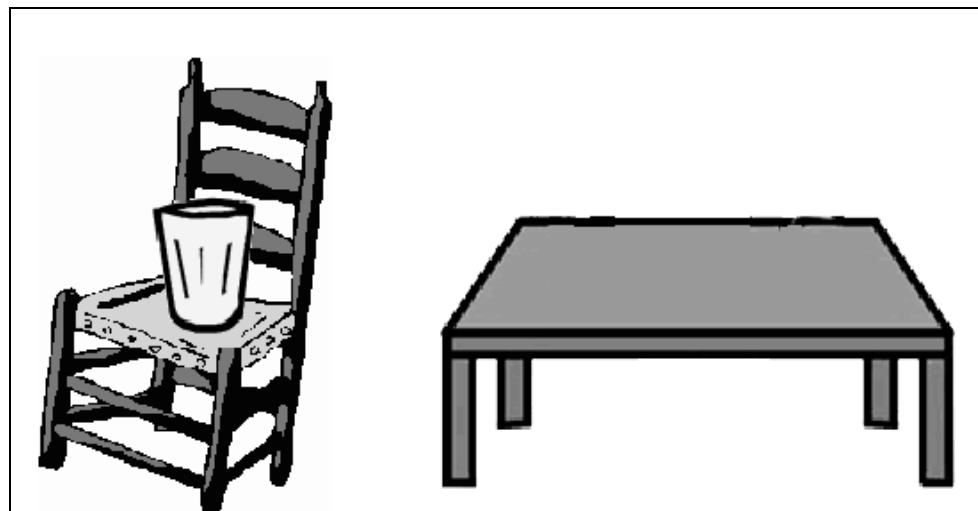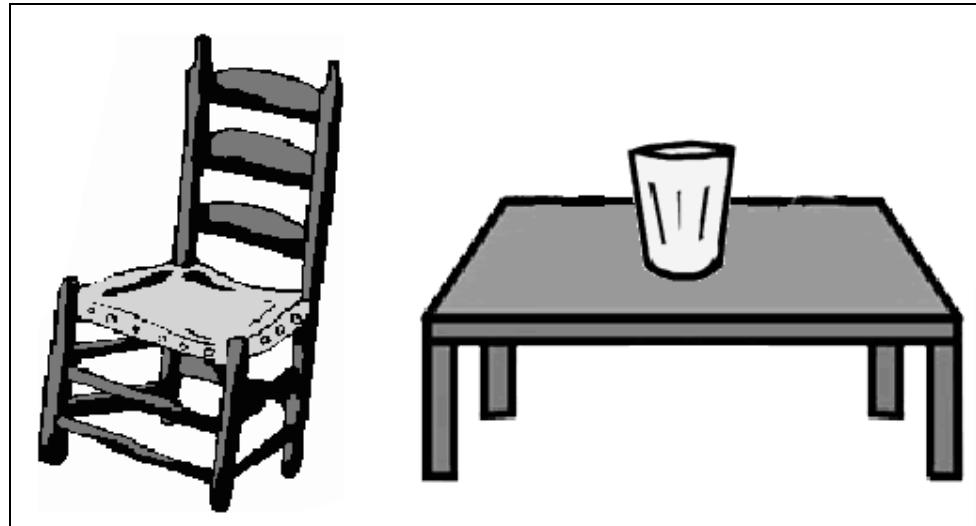
"Mark the dog that likes the penguin!" (Pengueni seven köpeği işaretle!)
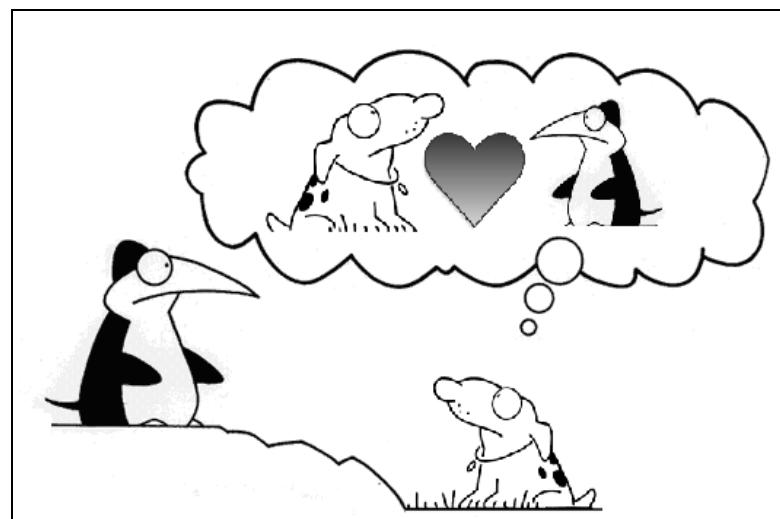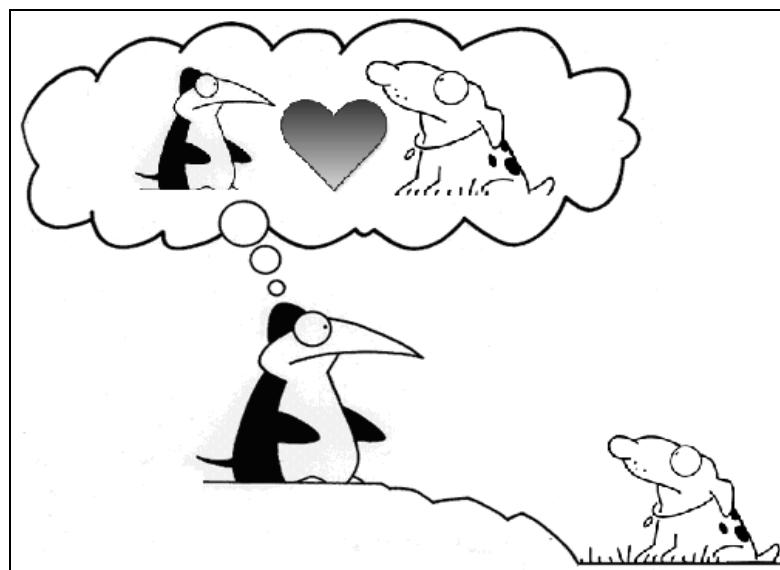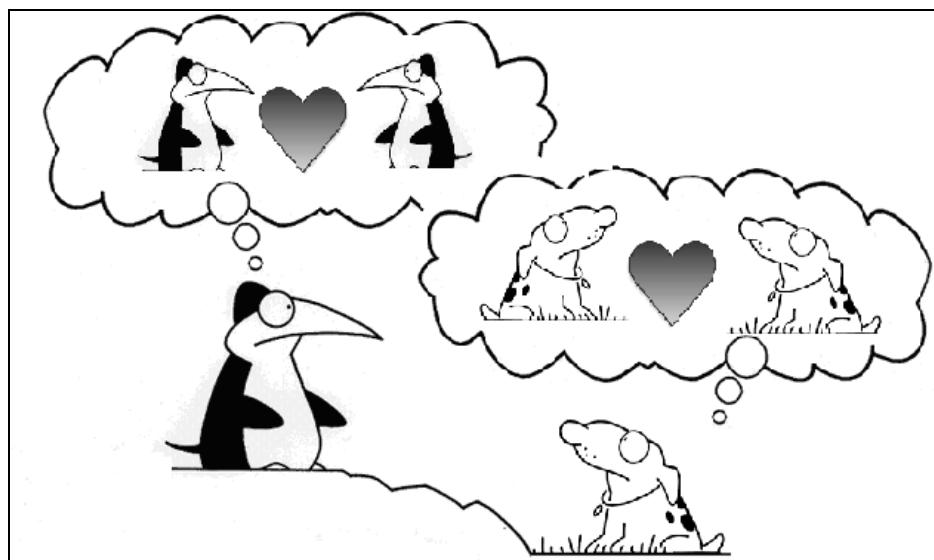
"Mark the kid on the chair!" (Sandalyedeki çocuğu işaretle!)
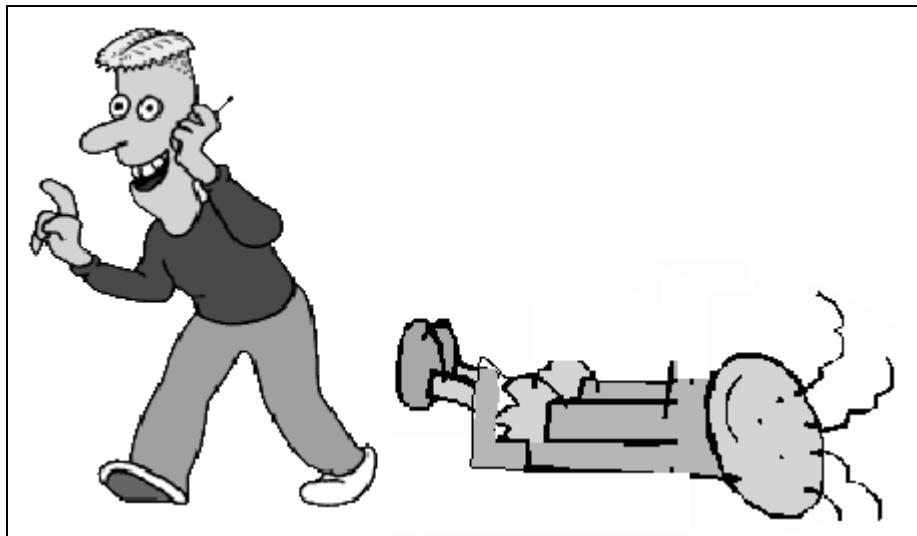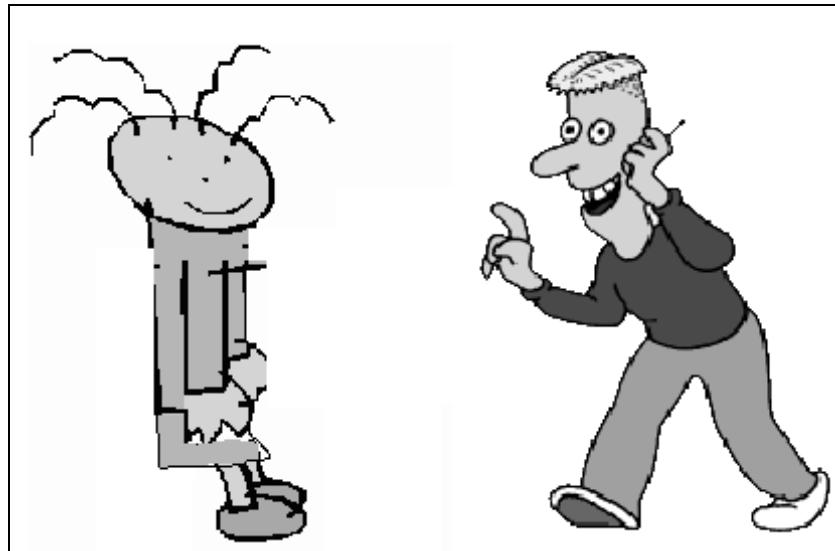
"Mark the bird that the dog watches!" (Köpeğin seyrettiği kuşu işaretle!)
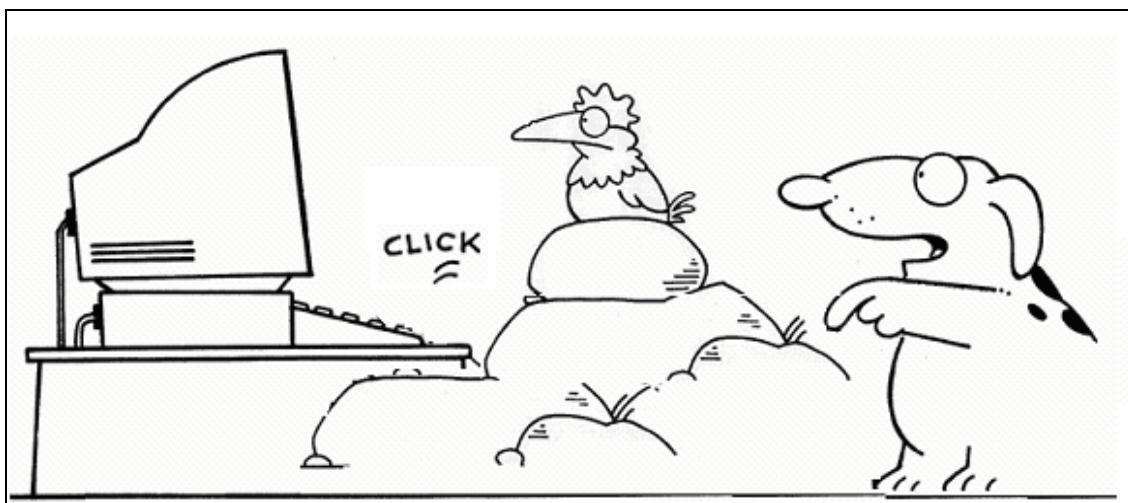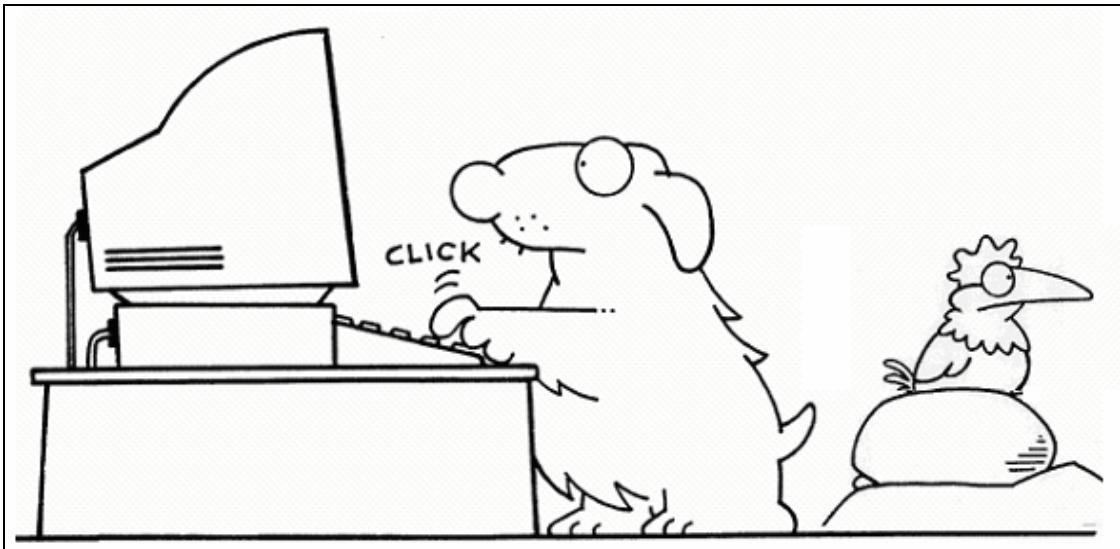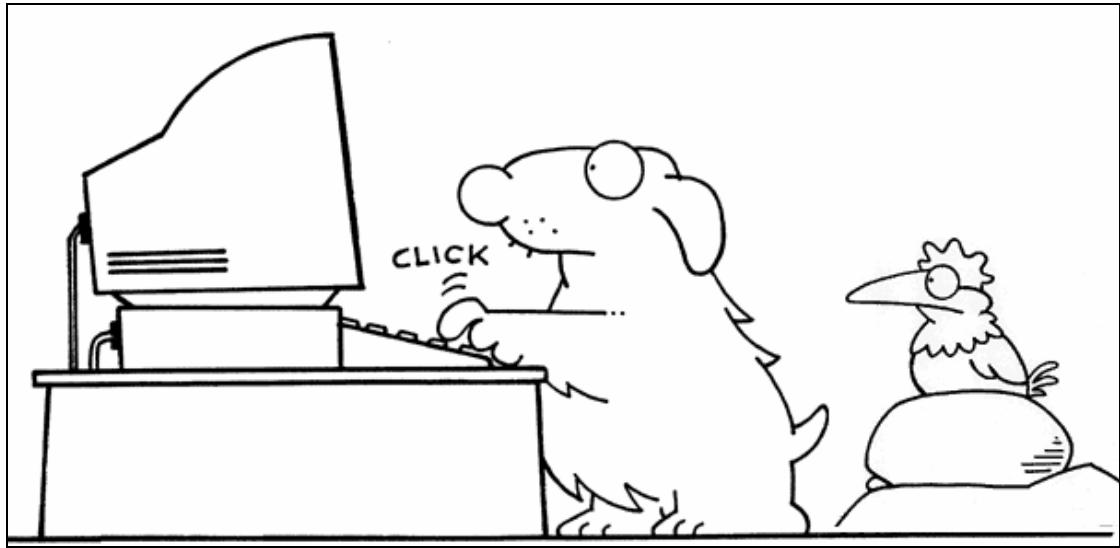
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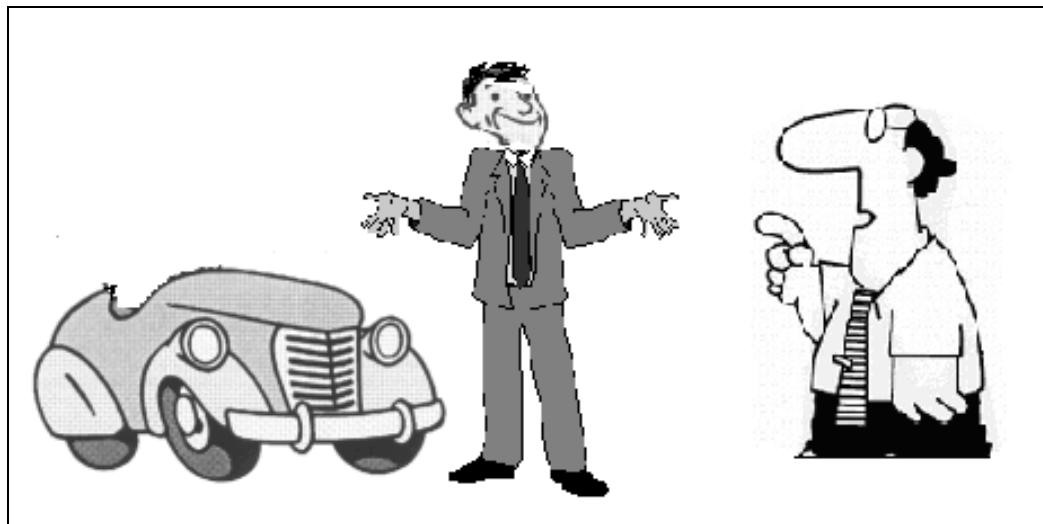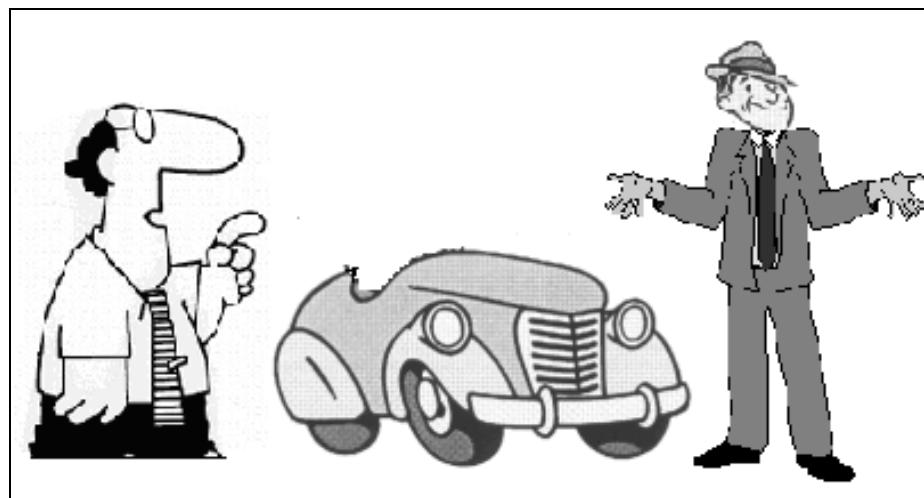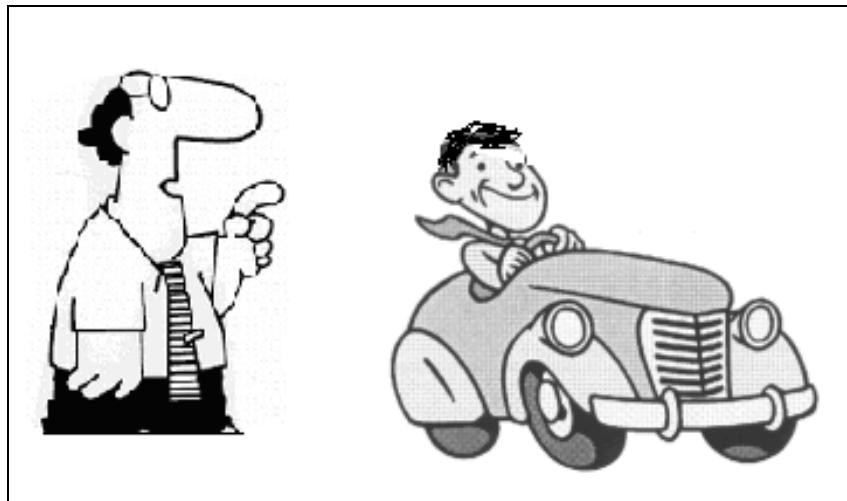
"Mark the woman that the bear beats!" (Ayının dövdüğü kadını işaretle!)
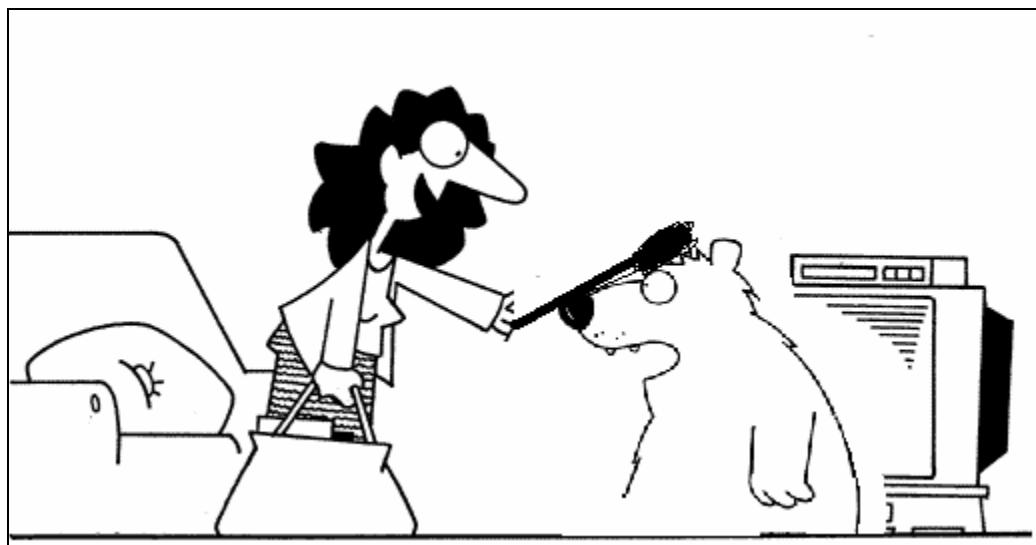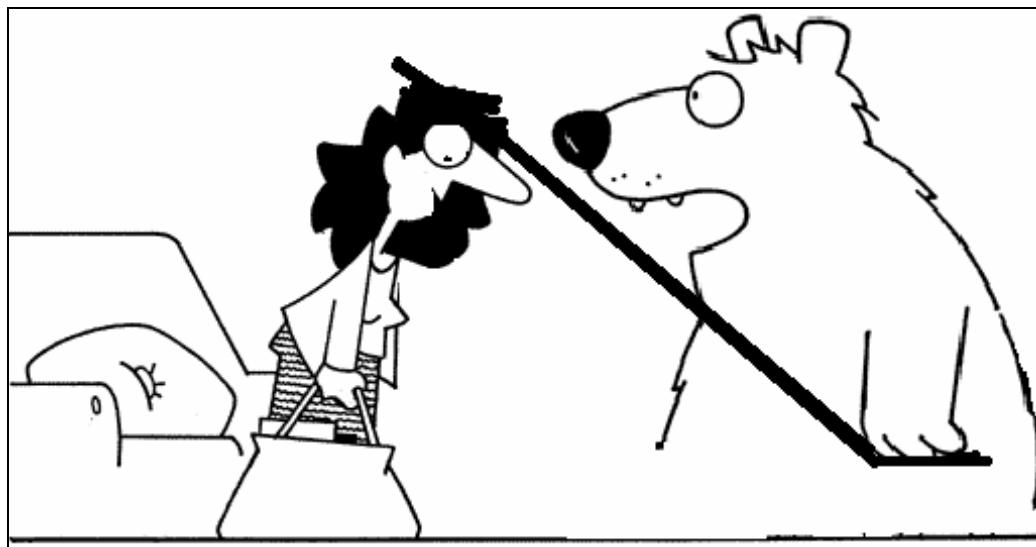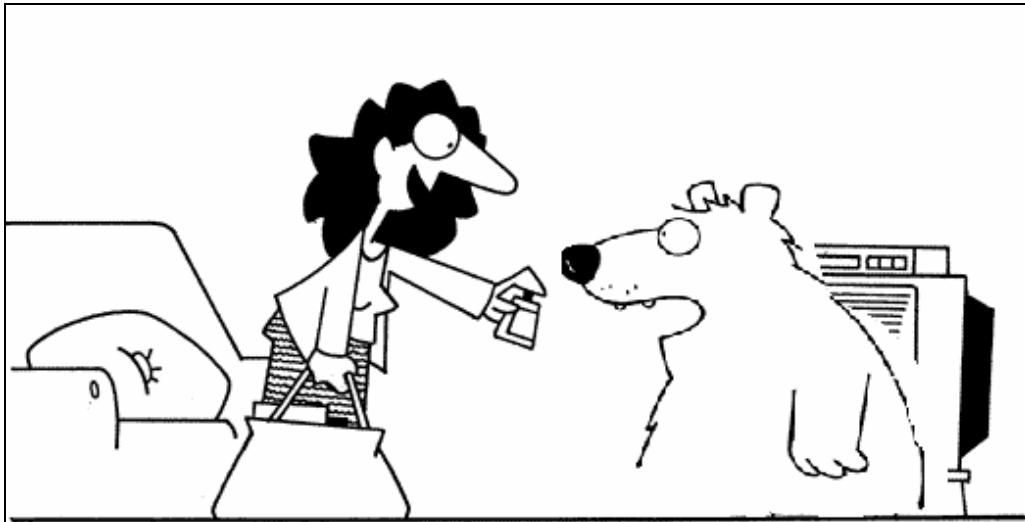
"Mark the bird with the glasses!" (Gözlüklü kuşu işaretle!)
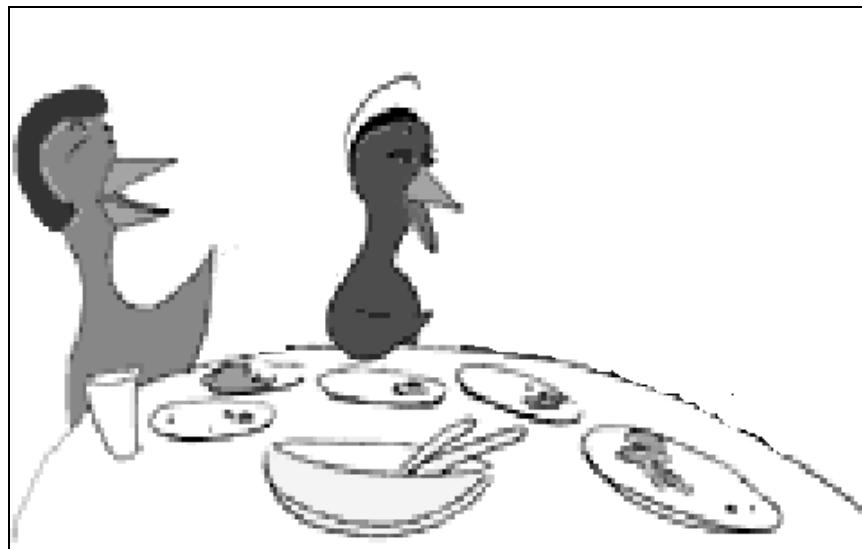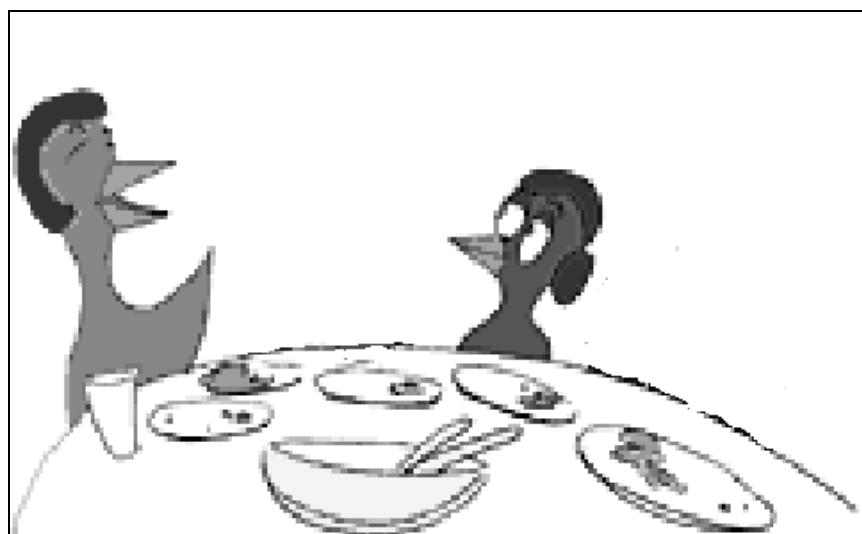
"Mark the woman that the man sees!" (Adamın gördüğü kadını işaretle!)
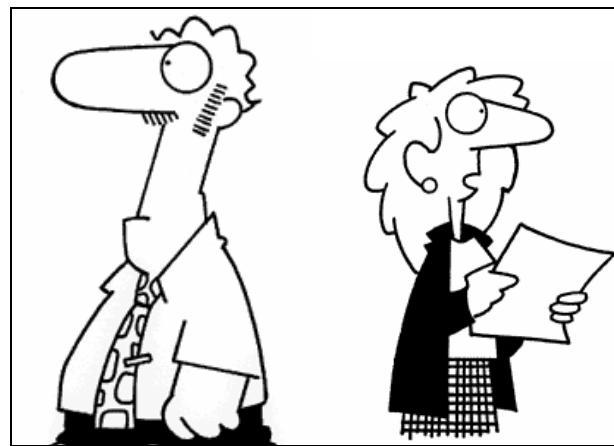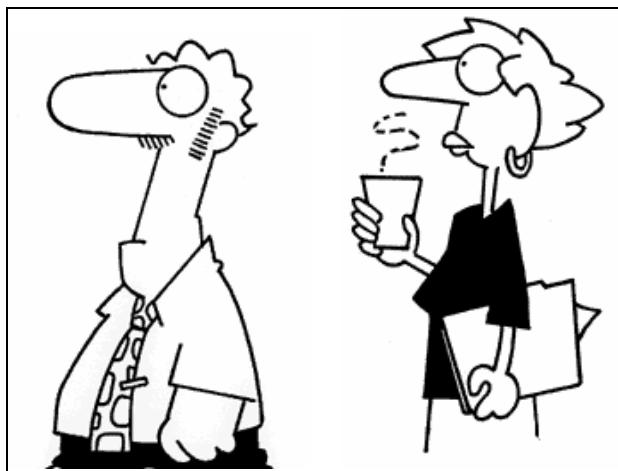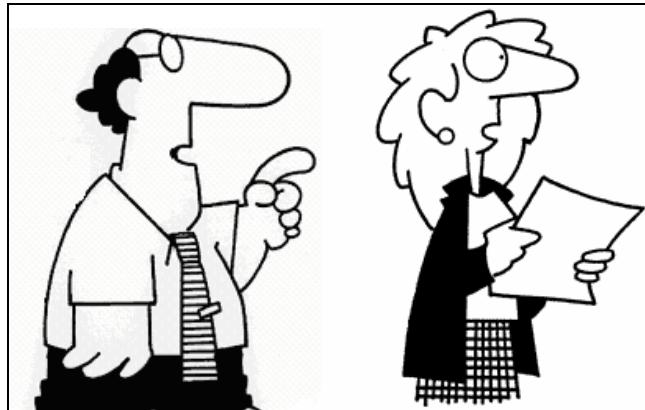
"Mark the cow that carries the lion!"   (Aslanı taşıyan ineği işaretle!)
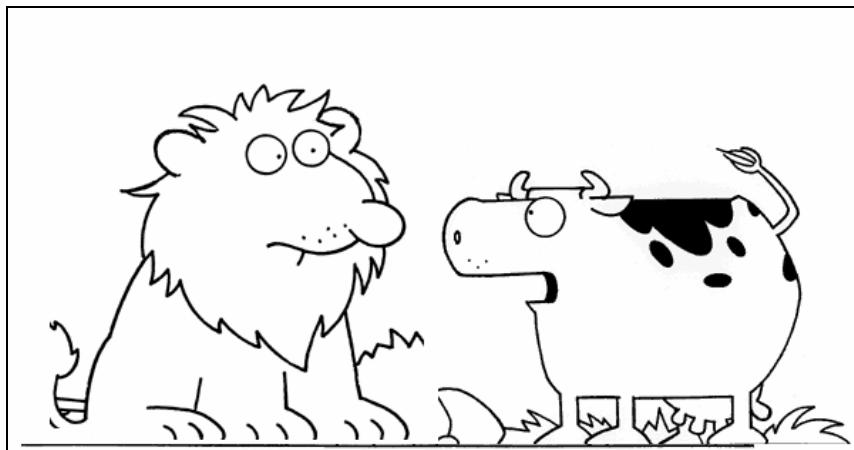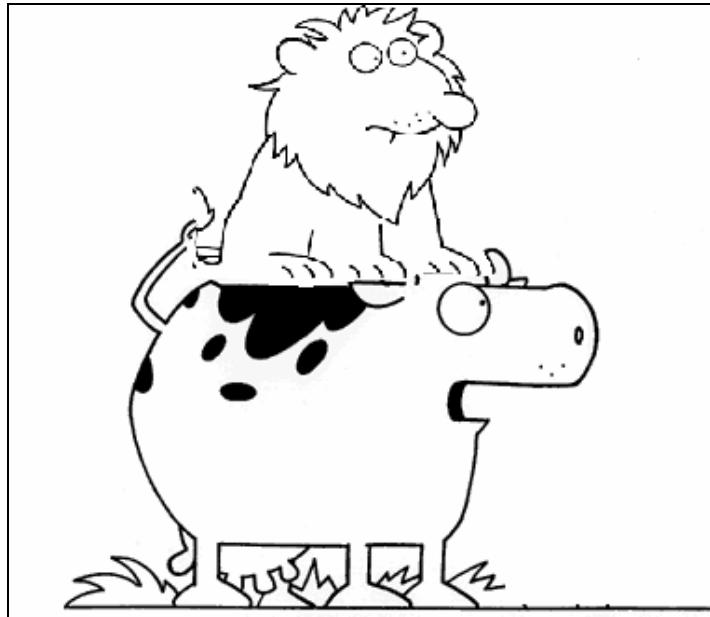
"Mark the cat on the ground!" (Yerdeki kediyi işaretle!)
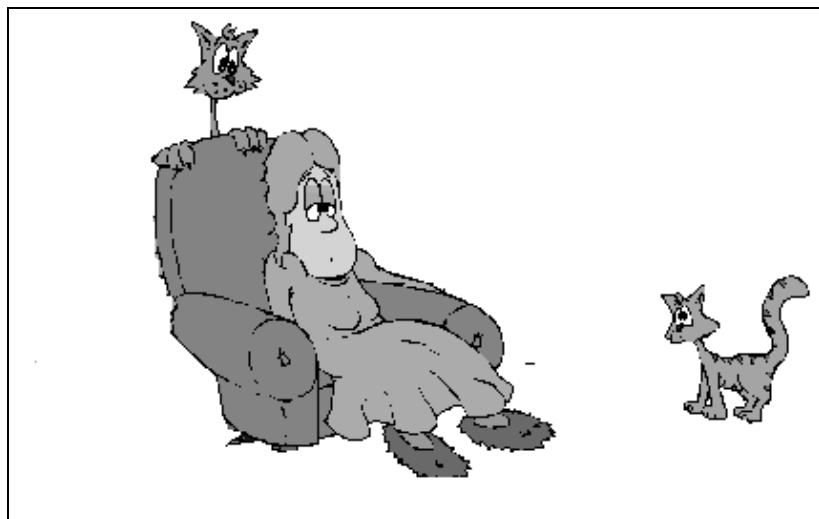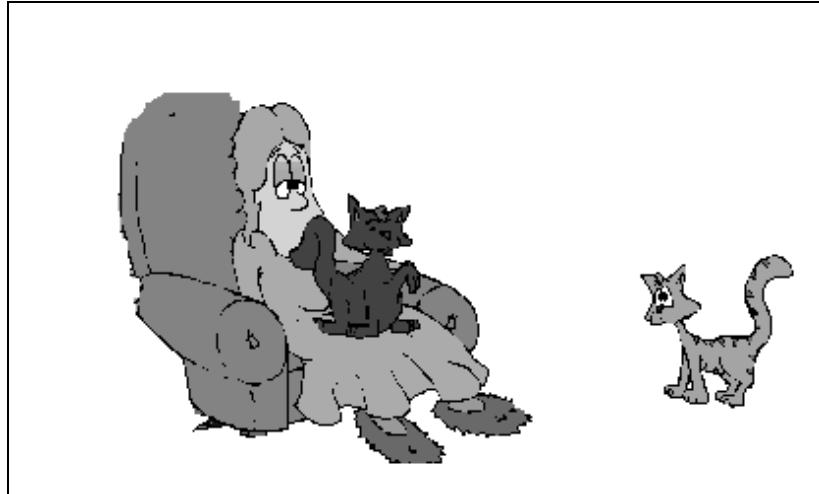
"Mark the cow that pulls the car!" (Arabayı çeken ineği işaretle!)
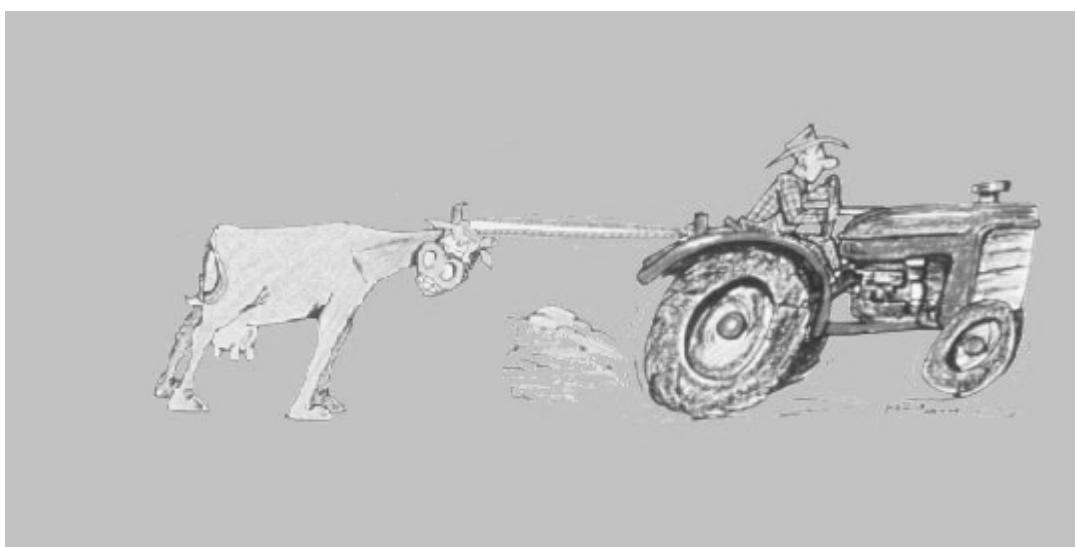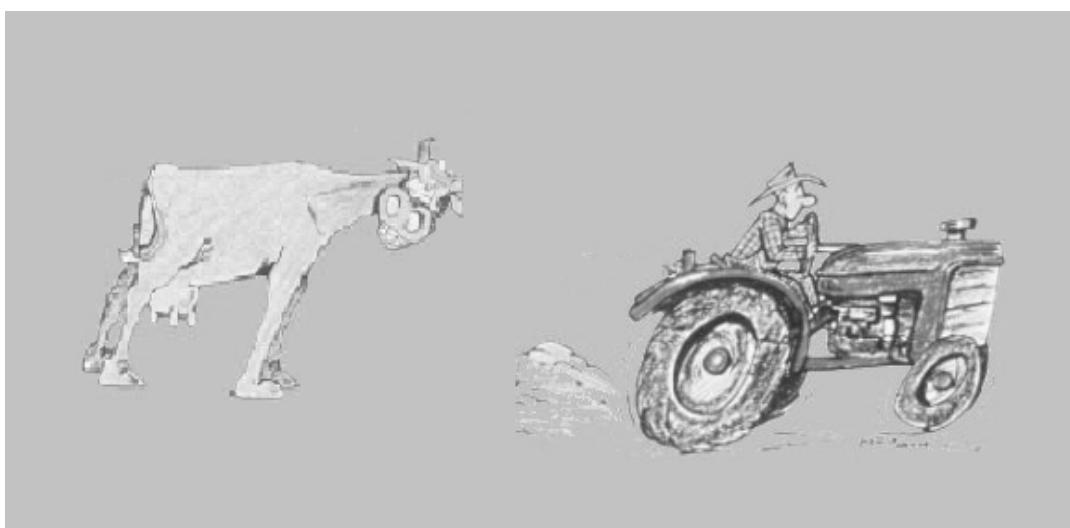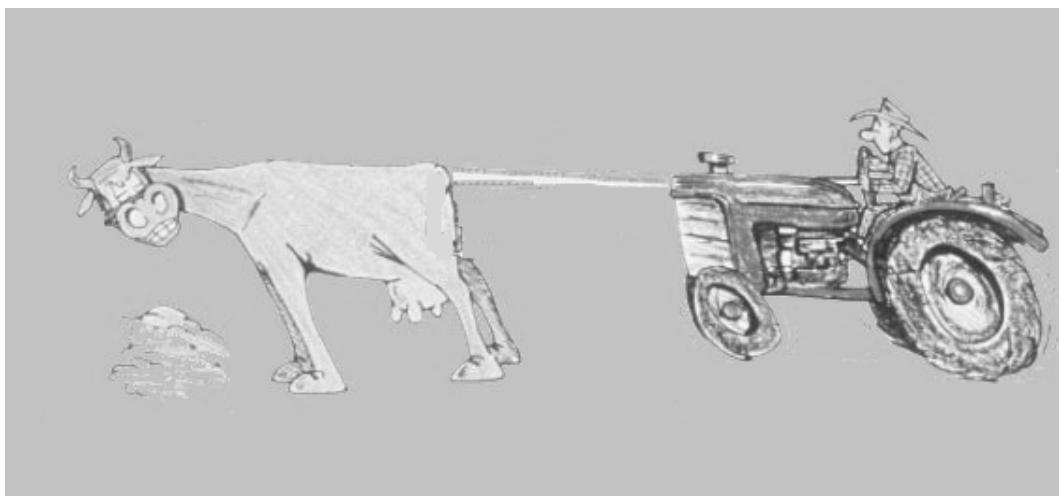
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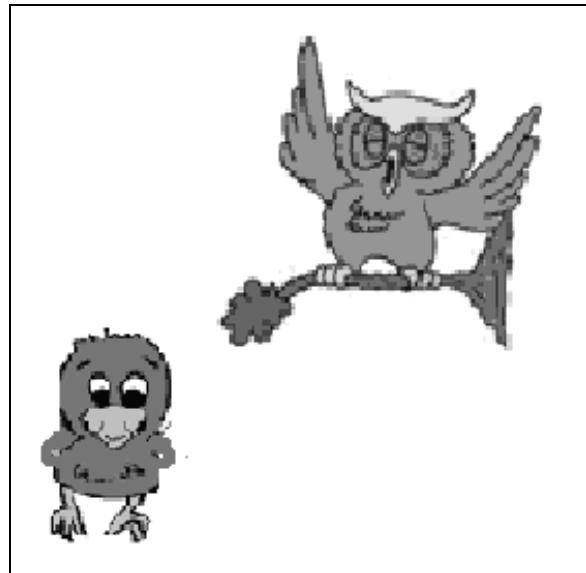
"Mark the snowwoman that the man kisses!" (Adamın öptüğü kardan kadını işaretle!)

"Mark the kid that the man paints!" (Adamın boyadığı çocuğu işaretle!)

"Mark the kid with the balloon!" (Balonlu çocuğu işaretle!)
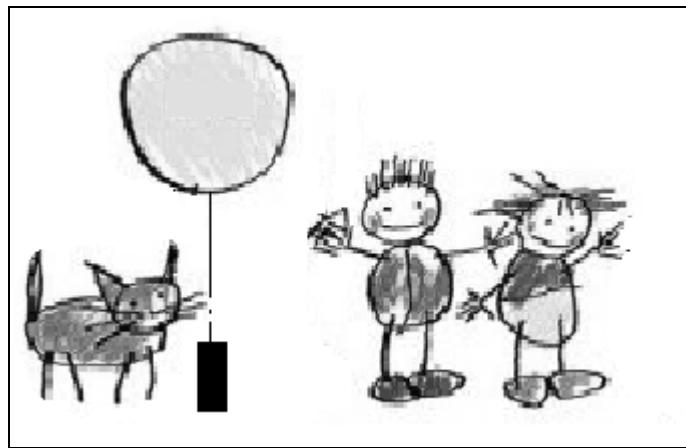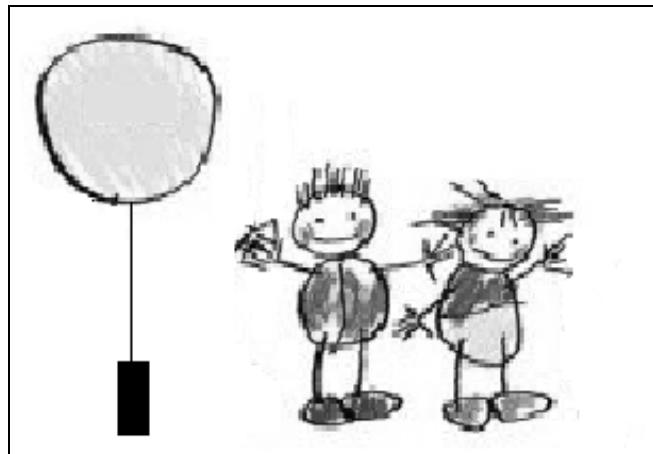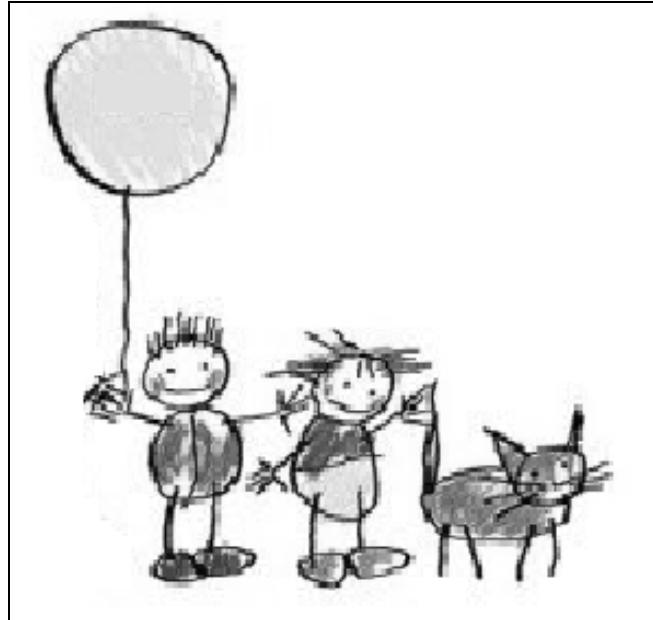
"Mark the dog that the penguin likes!" (Penguenin sevdiği köpeği işaretle!)
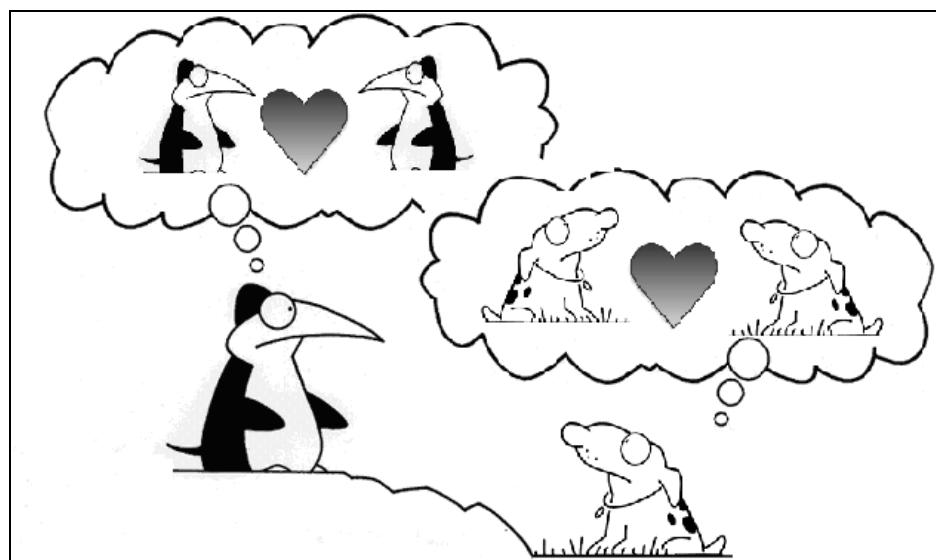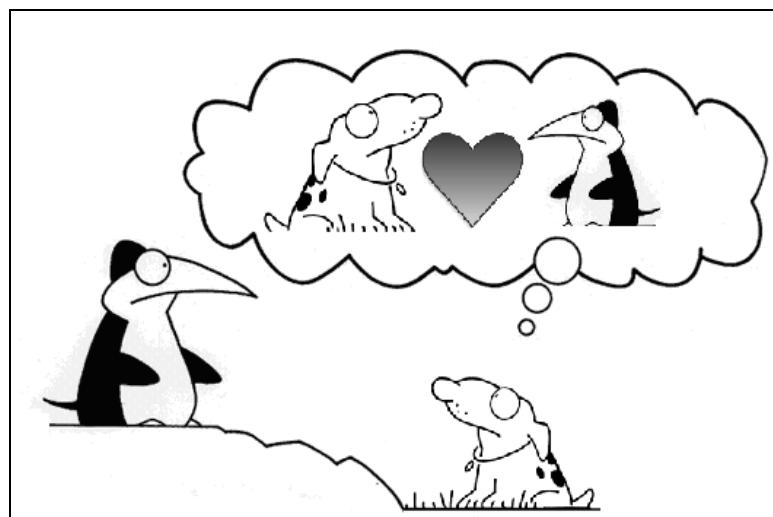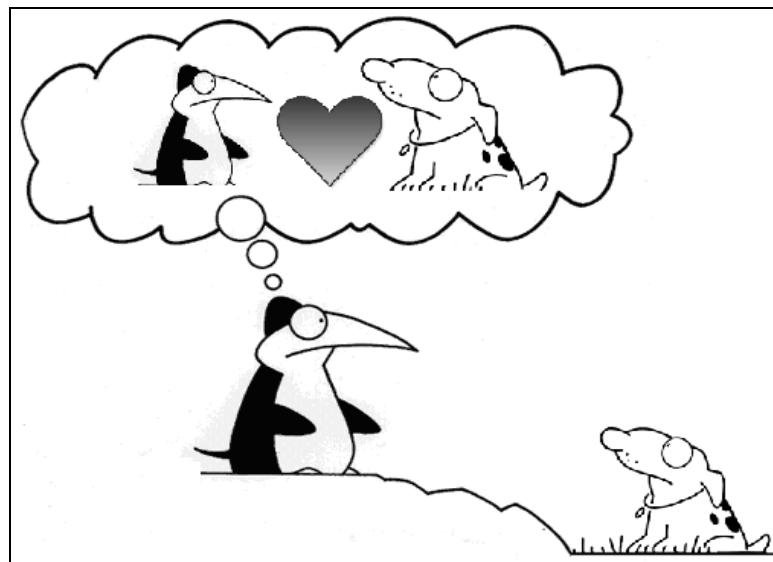
"Mark the glass on the chair!" (Sandalyedeki bardağı işaretle!)
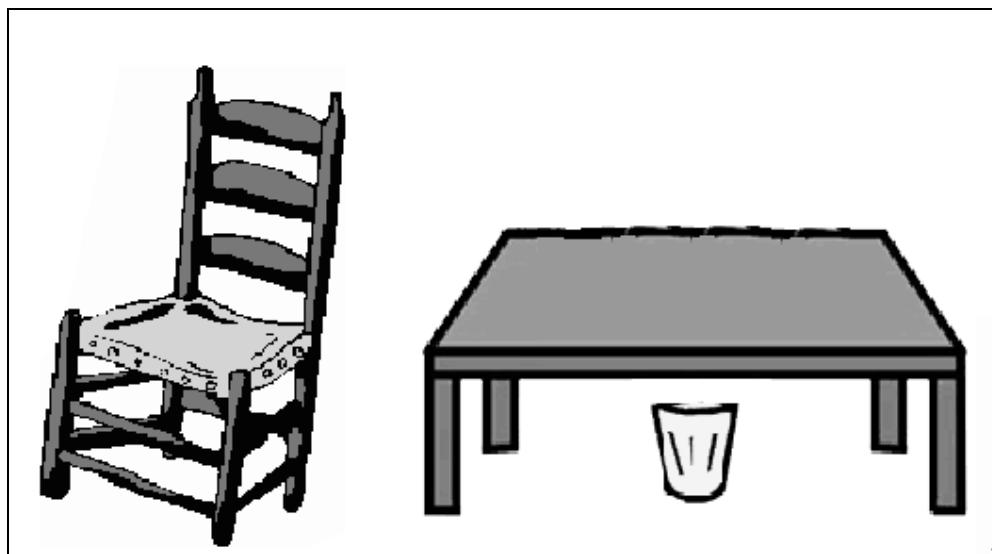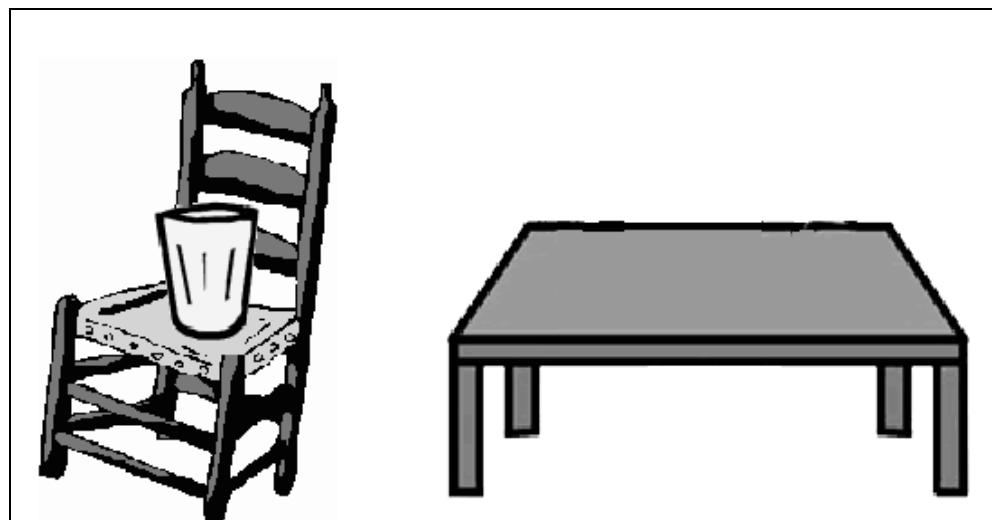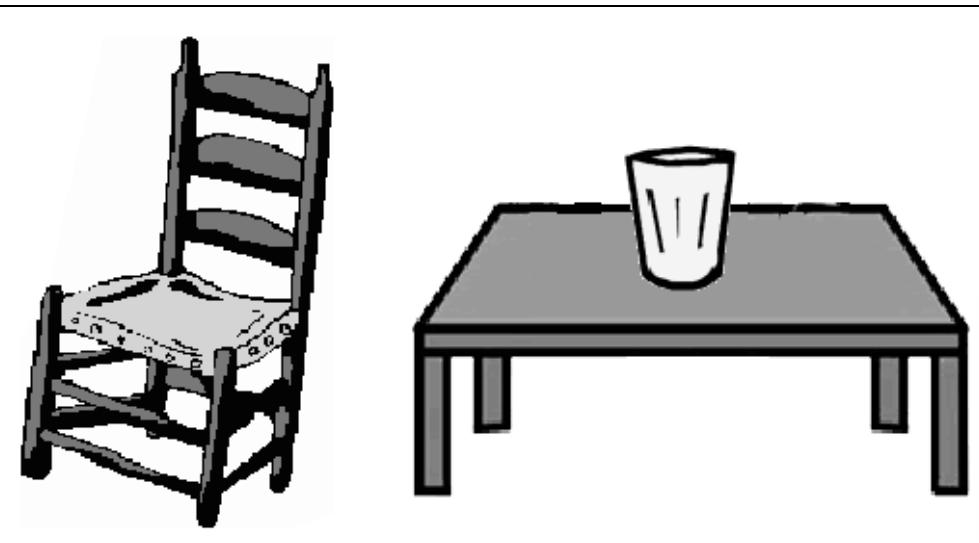
"Mark the boy that thinks (about) the girl!" (Kızı düşünen erkeği işaretle!)

"Mark the man with the hat!" (Şapkalı adamı işaretle!)
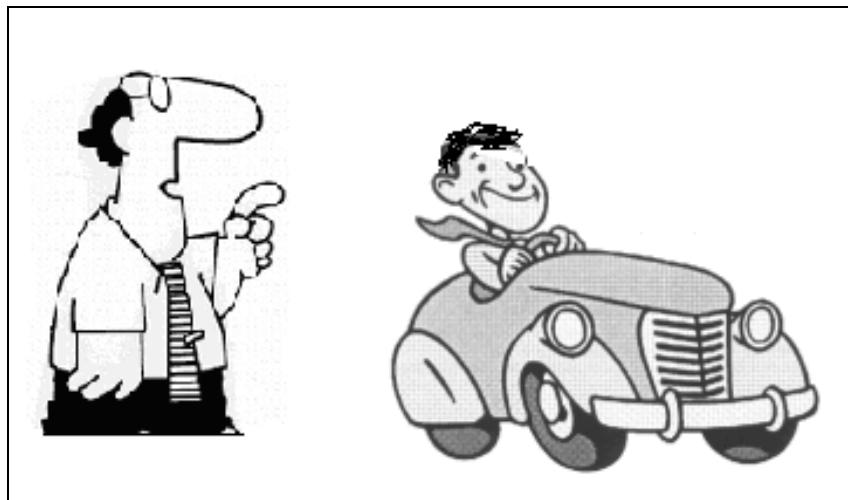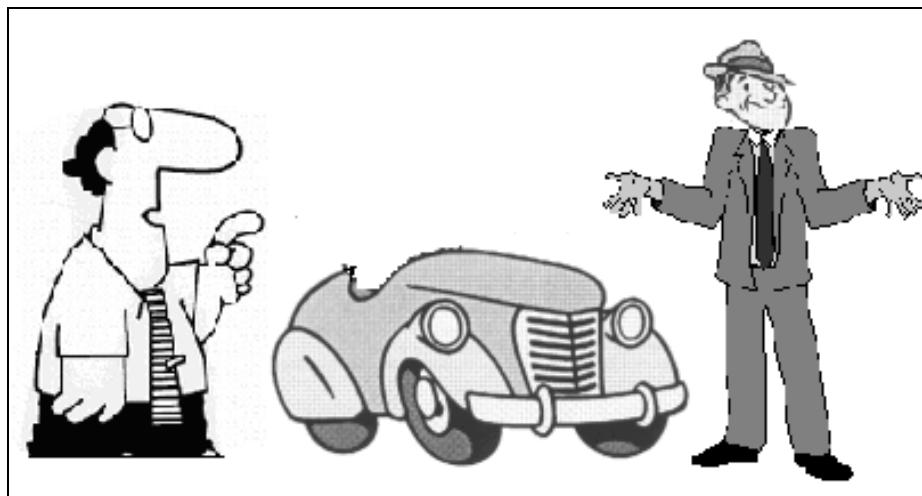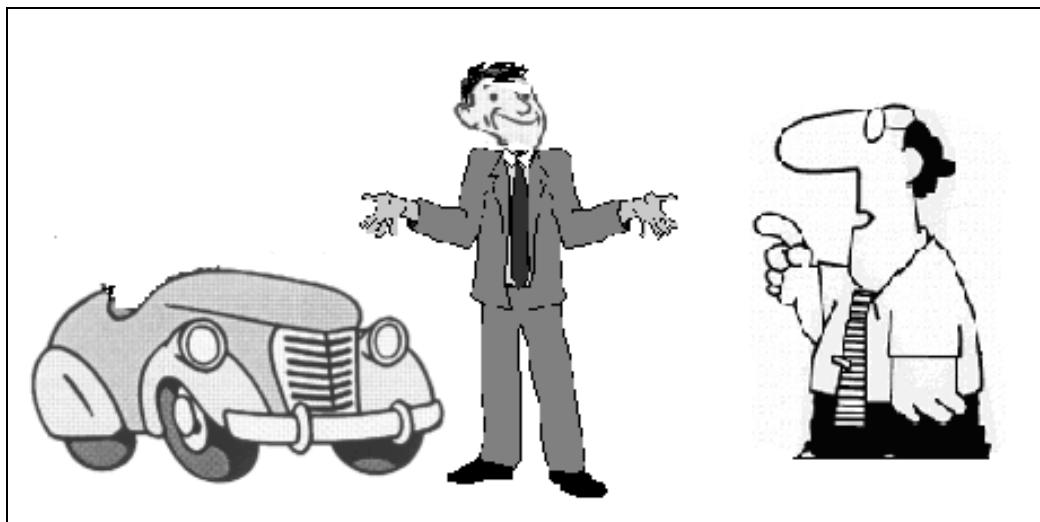
"Mark the man that the woman chases!" (Kadının kovaladığı adamı işaretle!)

"Mark the walking man!" (Yürüyen adamı işaretle!)
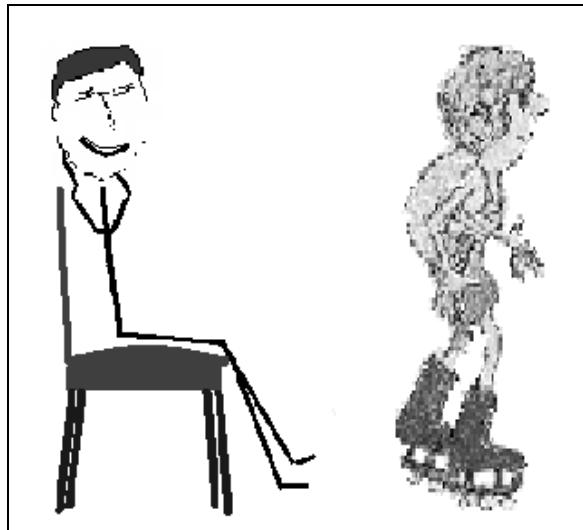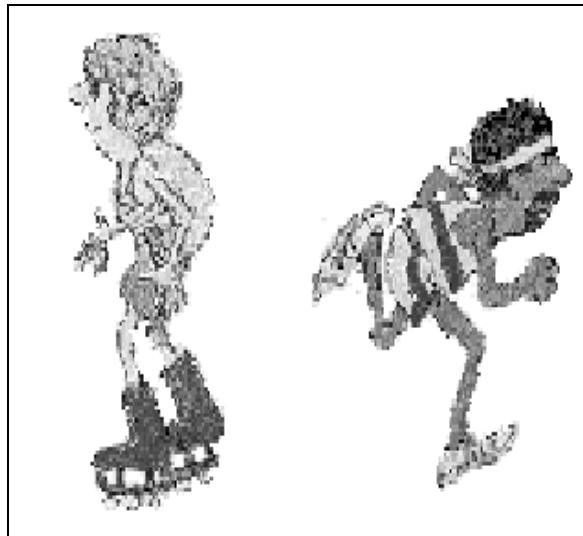
"Mark the bird that watches the dog!" (Köpeği seyreden kuşu işaretle!)
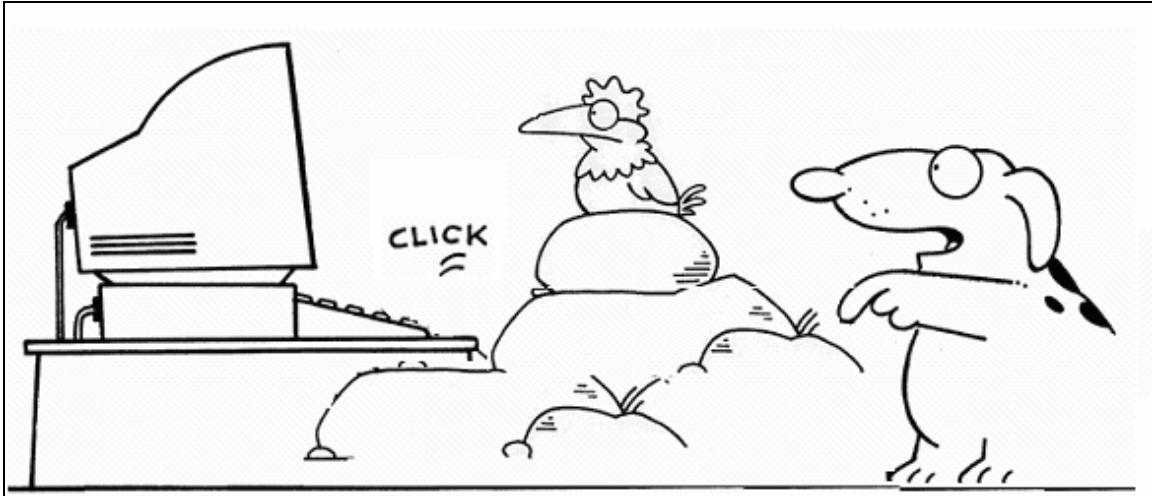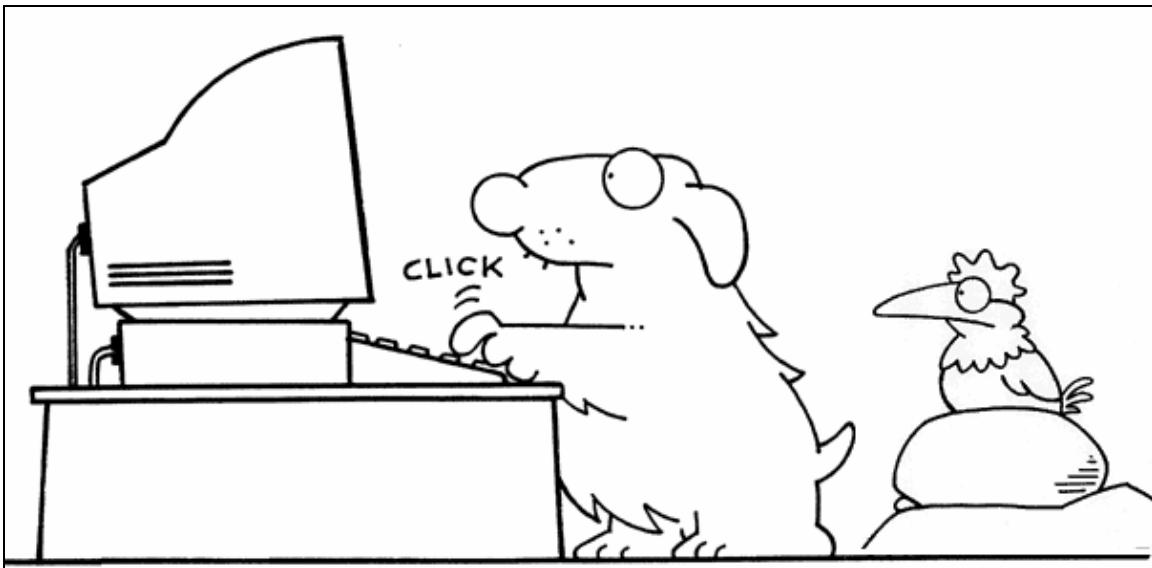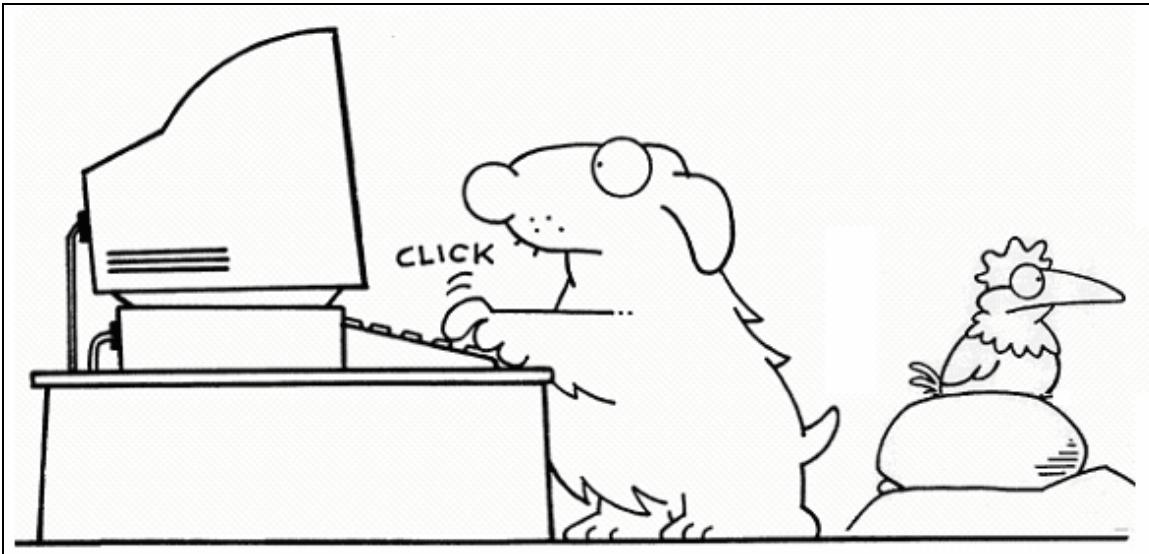
"Mark the bird with the hat!" (Şapkalı kuşu işaretle!)
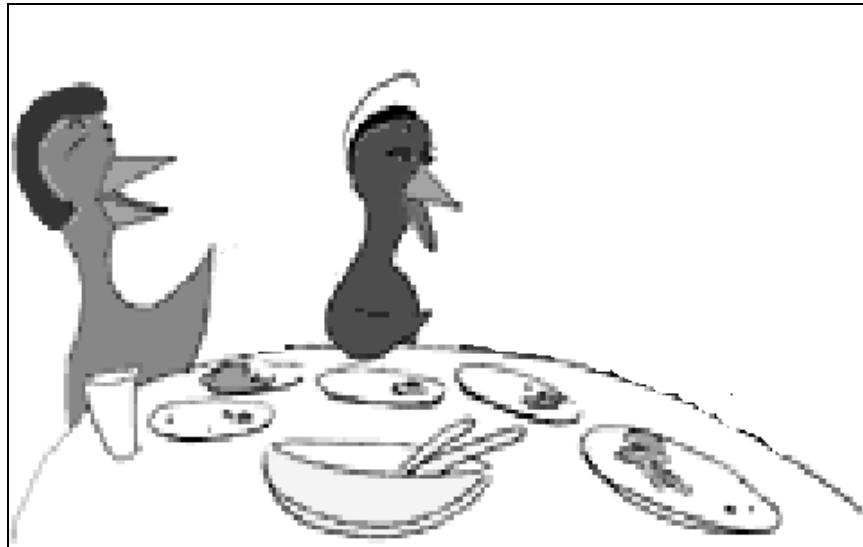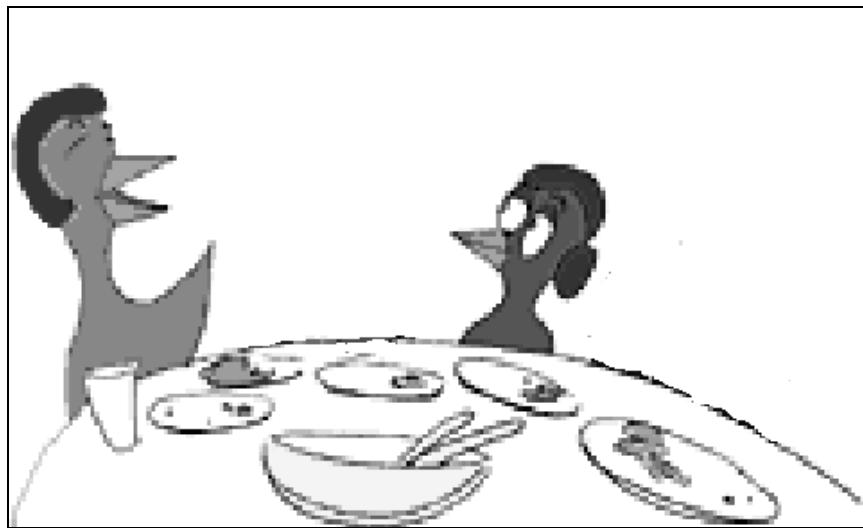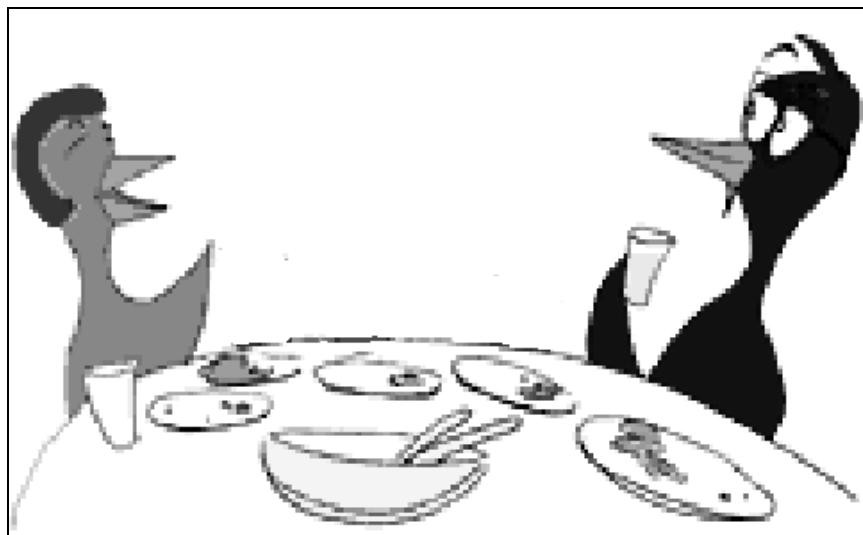
"Mark the kid that paints the man!" (Adamı boyayan çocuğu işaretle!)

"Mark the flying bird!" (Uçan kuşu işaretle!)
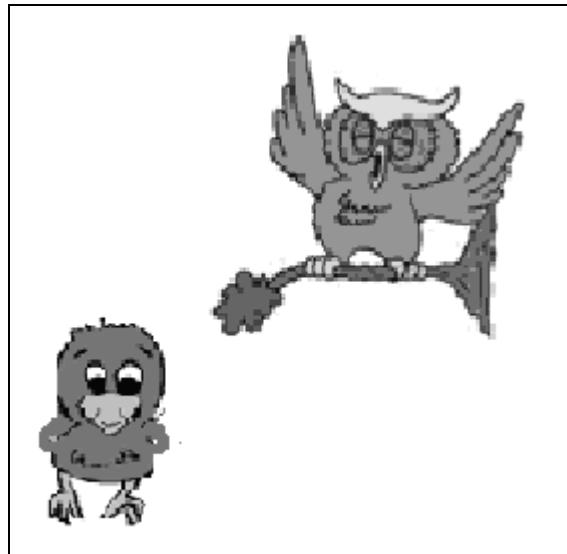
"Mark the cow that the lion carries!" (Aslanın taşıdığı ineği işaretle!)
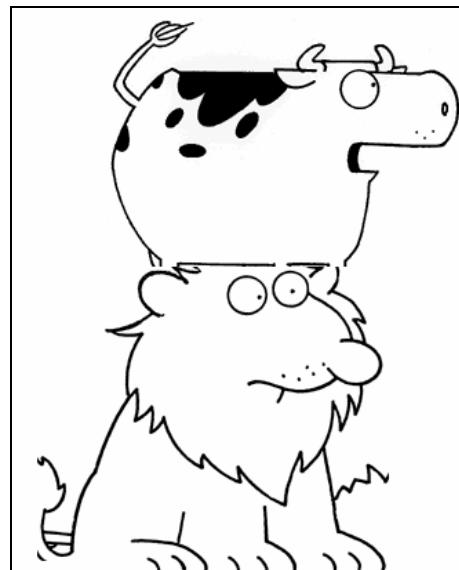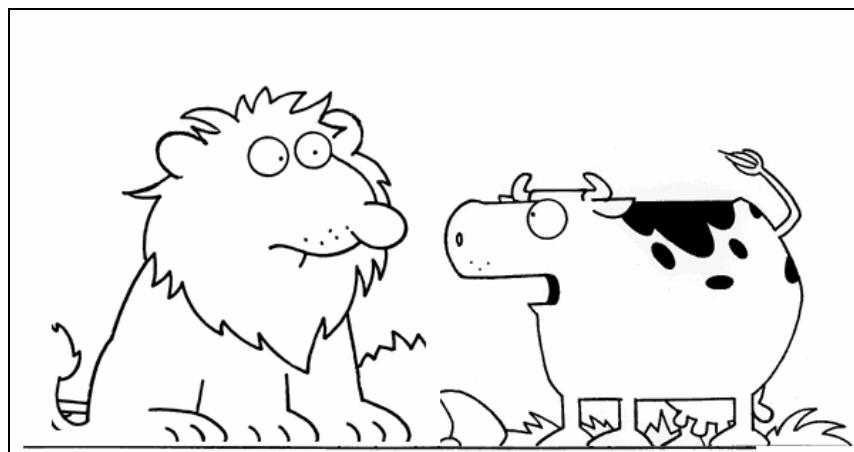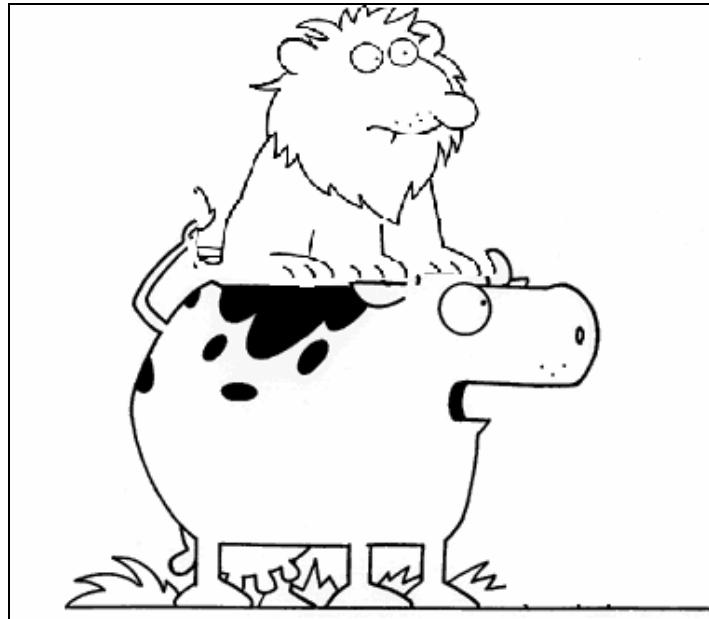
"Mark the boy that the girl thinks!" (Kızın düşündüğü erkeği işaretle!)

“Mark the cat in the chair!” (Sandalyedeki kediyi işaretle!)
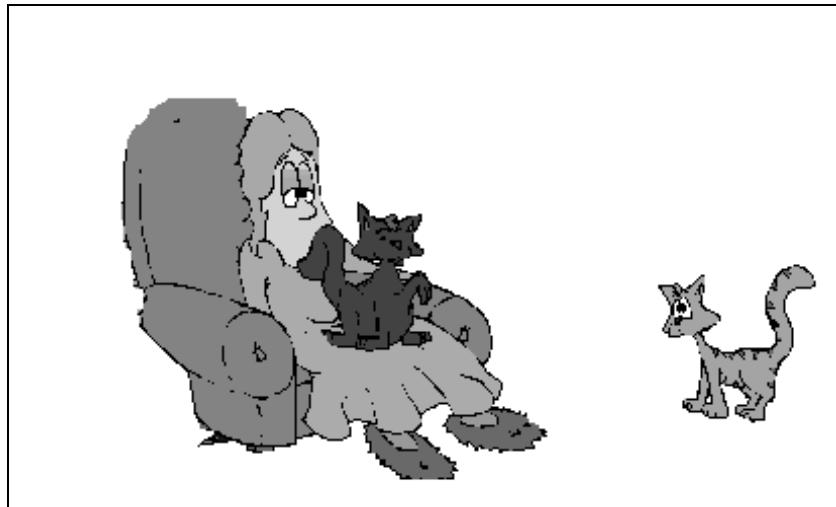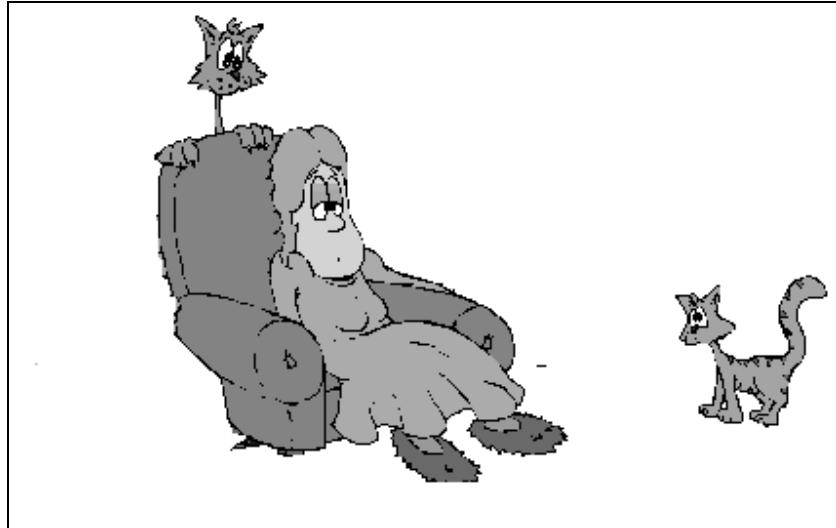
"Mark the snowwoman that kisses the man!" (Adamı öpen kardankadını işaretle!)

"Mark the lonely squirrel!" (Yalnız sincabı işaretle!)
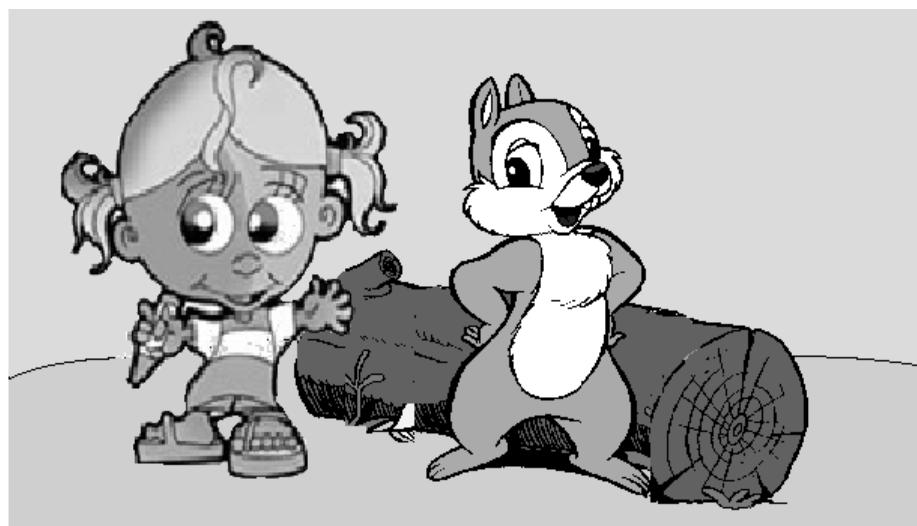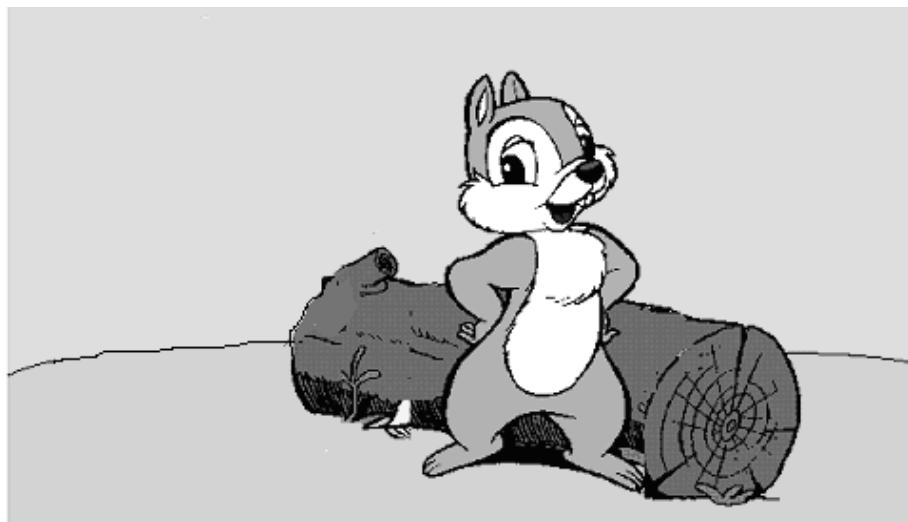
"Mark the cow that the car pulls!" (Arabanın çektiği ineği işaretle!)
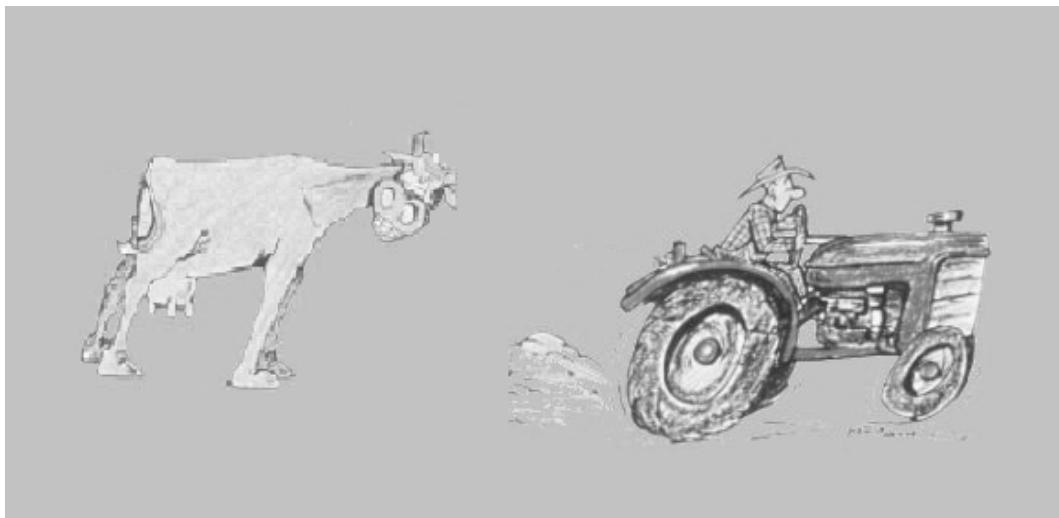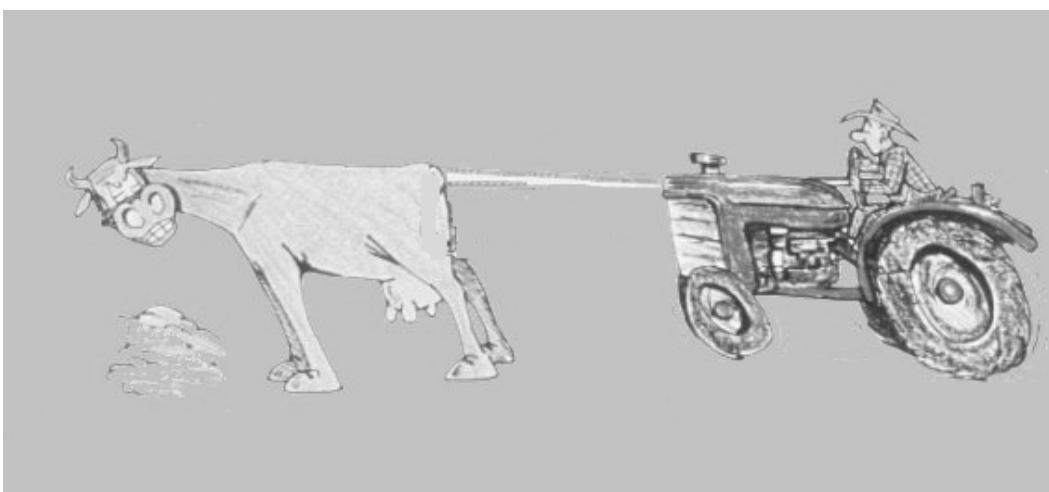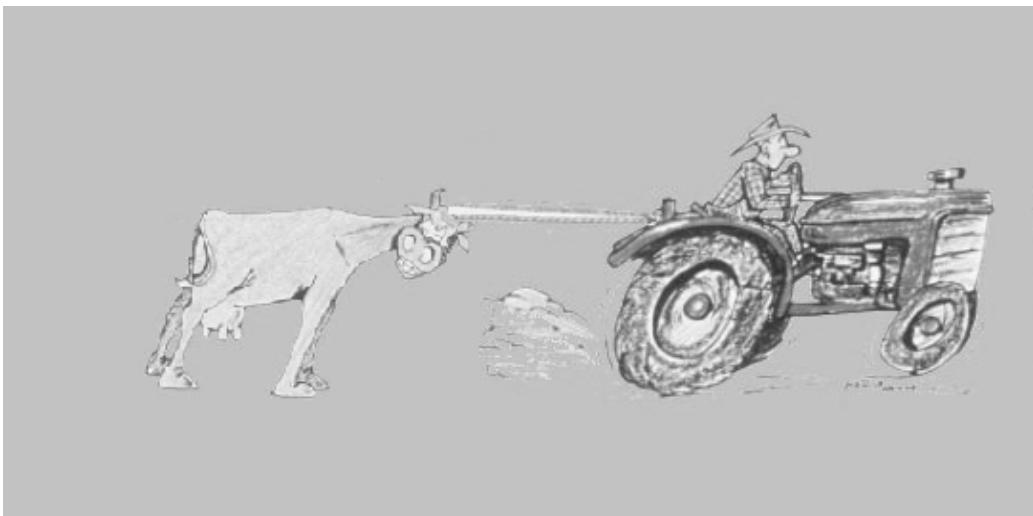
"Mark the rabbit on the table!" (Masadaki tavşanı işaretle!)
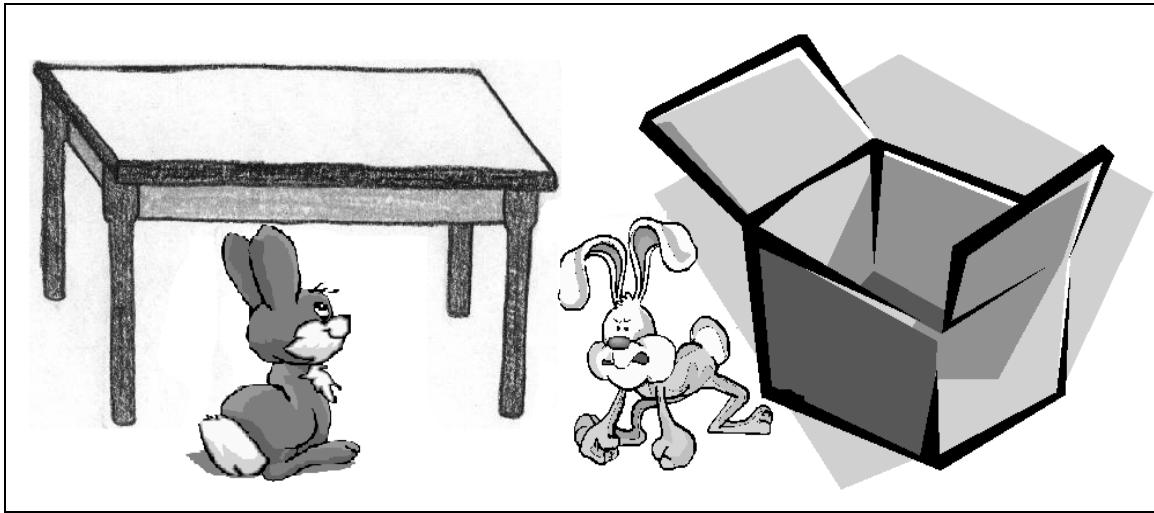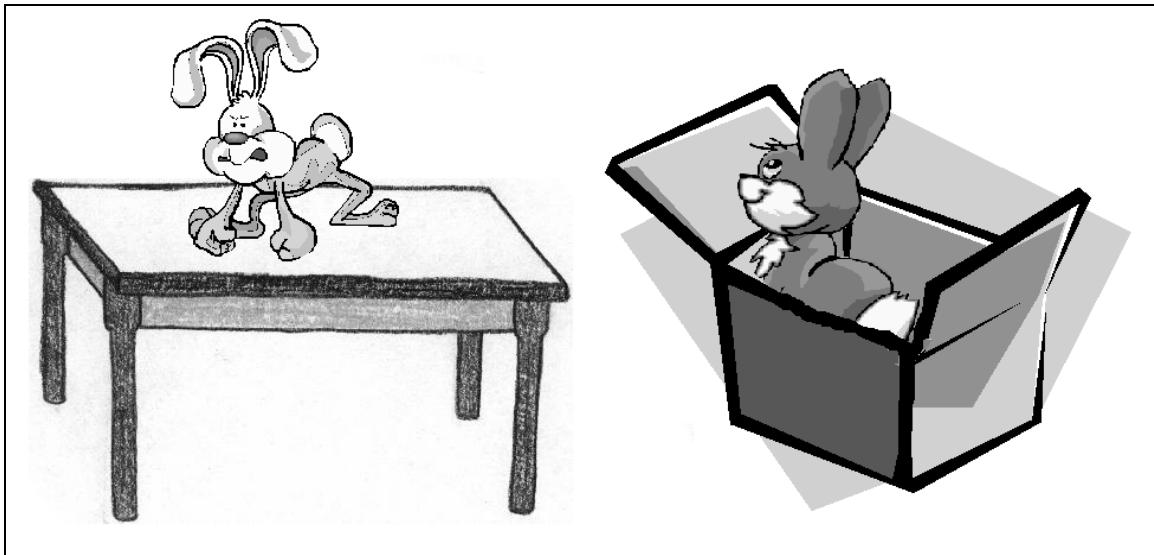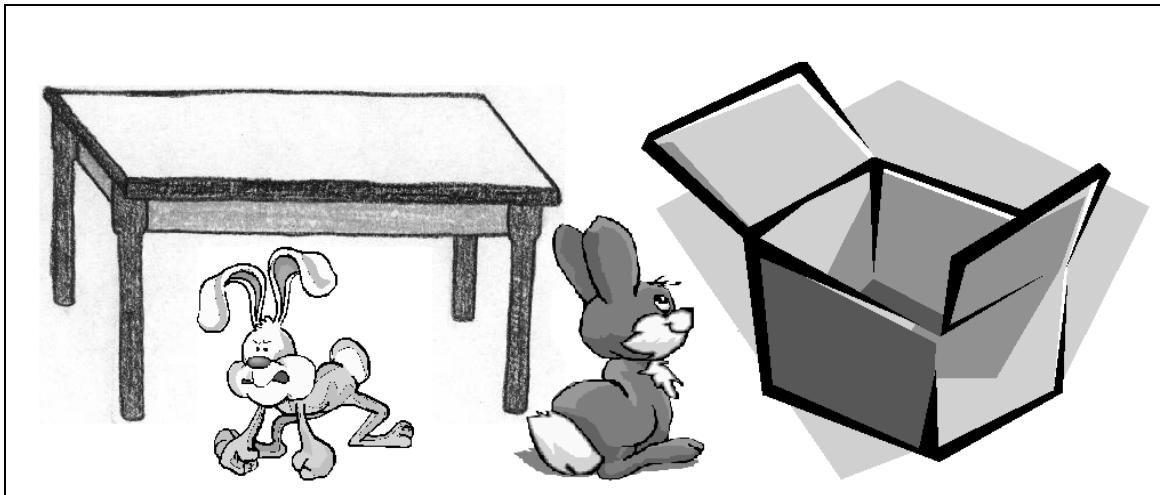
"Mark the kid on the stand/walking kid!" (Ayaktaki çocuğu işaretle!)
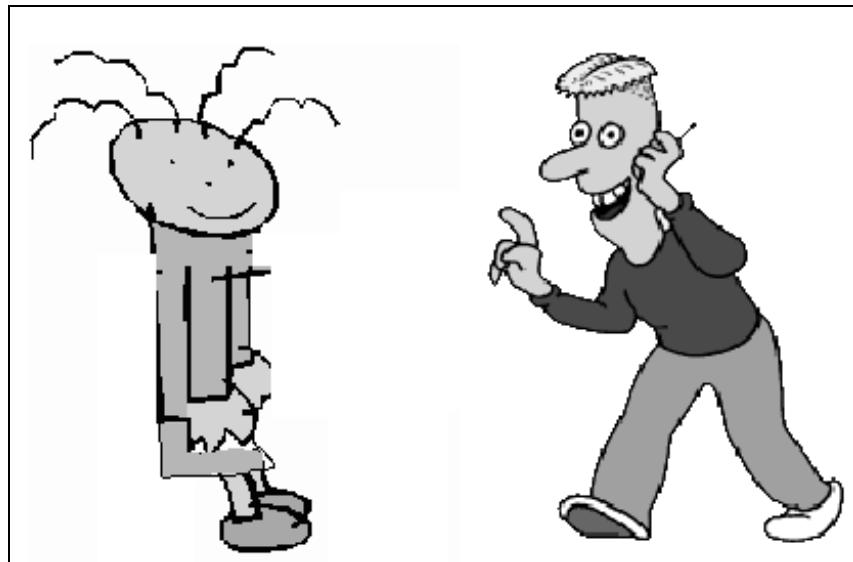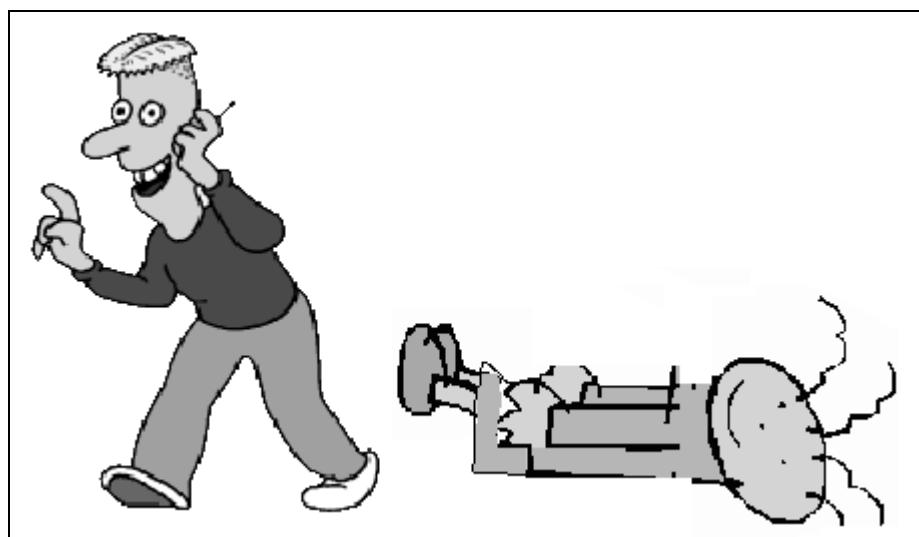
"Mark the woman that beats the bear!" (Ayıyı döven kadını işaretle!)
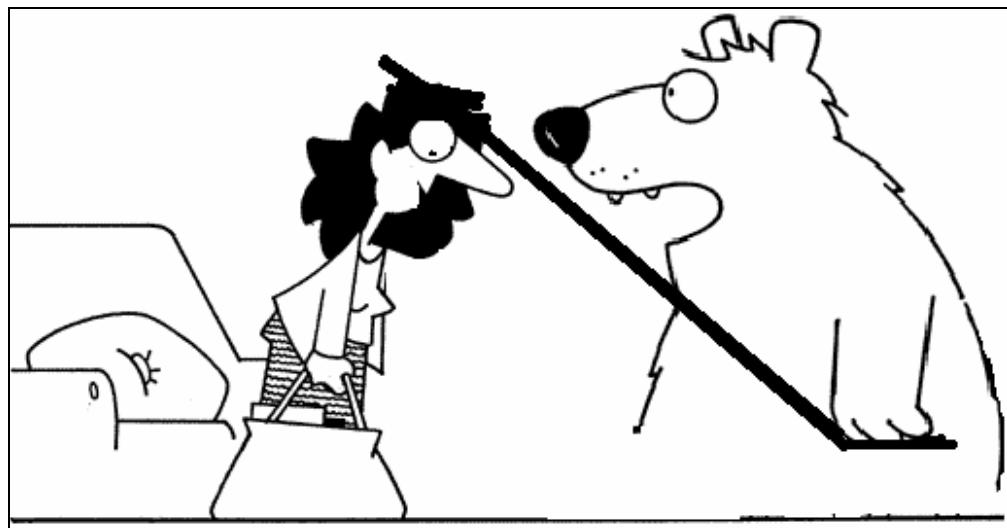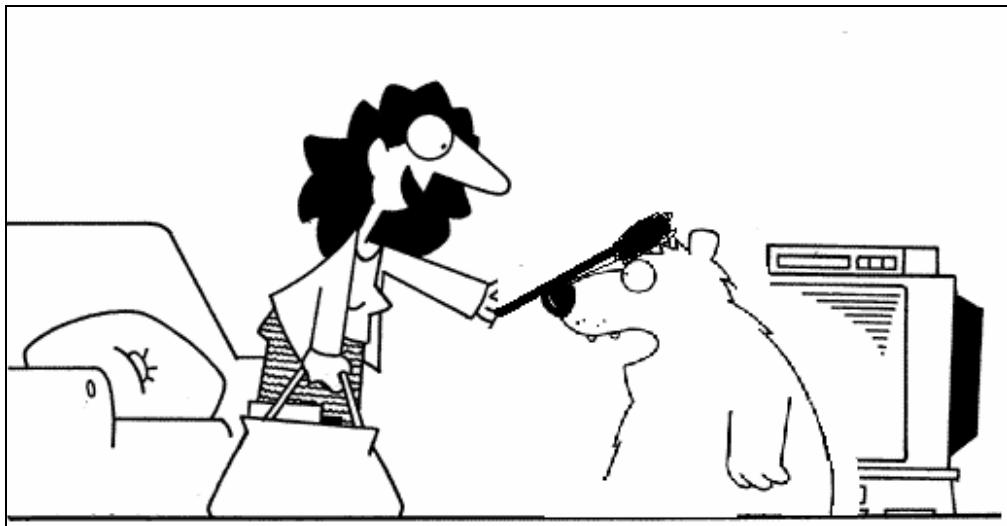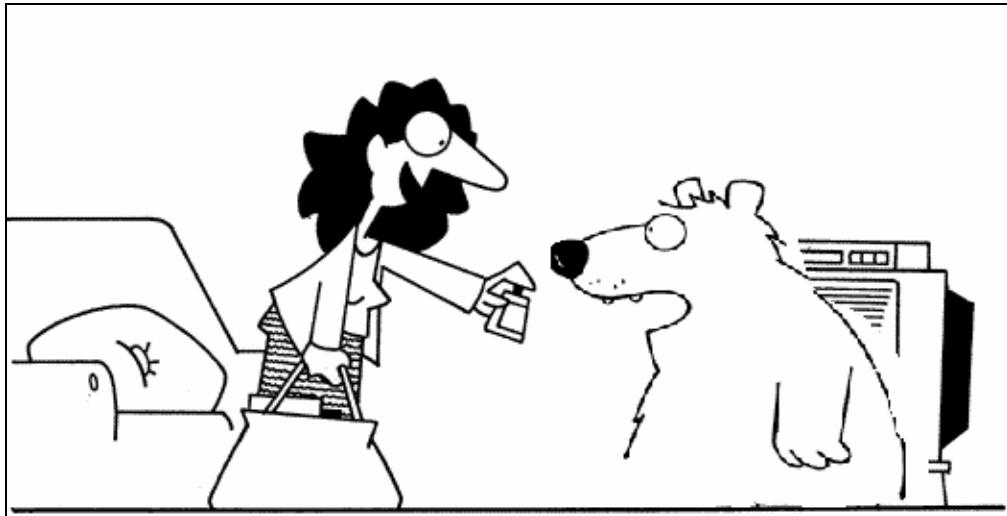
"Mark the kid with the cat!" (Kedili çocuğu işaretle!)
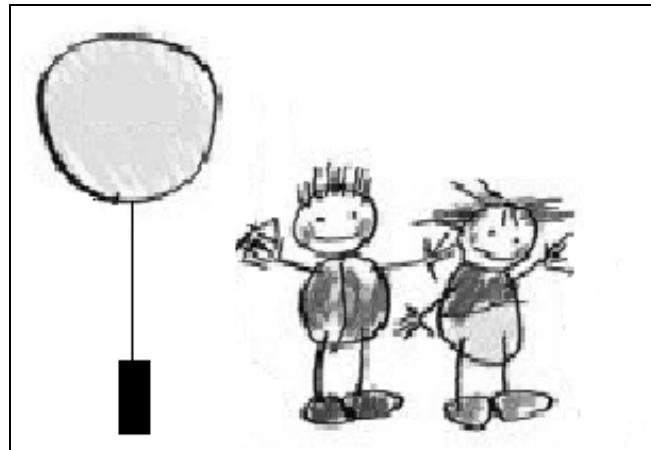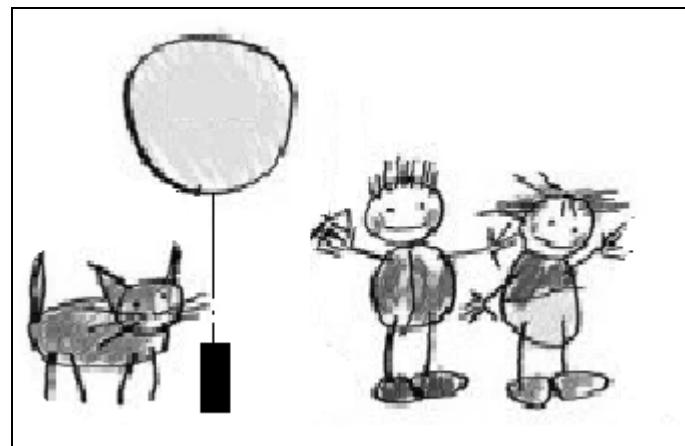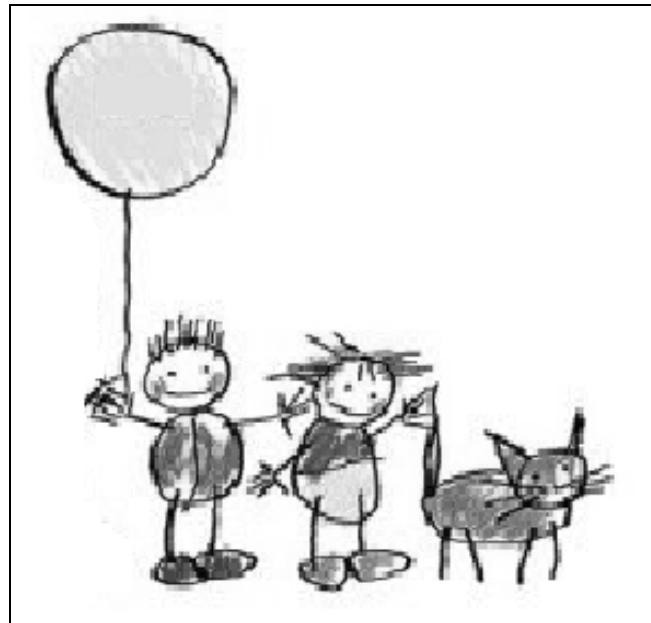
APPENDIX B

BOOKLET USED IN TASK 2

The booklet used in Task 2 is given below. The tested series of pictures were pages series of pictures 89, 93, 95, 96, 98, 99, 101, 105, 106, 107.

Task 2:

Each page in this booklet has a series of three pictures. And each picture describes a single action. As you go through each page, you will hear the description of that action. Your task will be to mark the picture in the description. You will have 10 seconds for each page.

Note that IF (and only if) a picture contains "an animal with a leash held by a human being," it means that that person "owns" the animal. On any page, it might be the case that some pictures have animals with leashes and some without. You need to treat the ones with leashes as owned by the person holding the leash and the ones without leashes as owned by noone.

Note also that the same series of pictures will appear more than once asking different questions.

"The teacher's dog writes (something)." (Öğretmenin köpek yazıyor.)
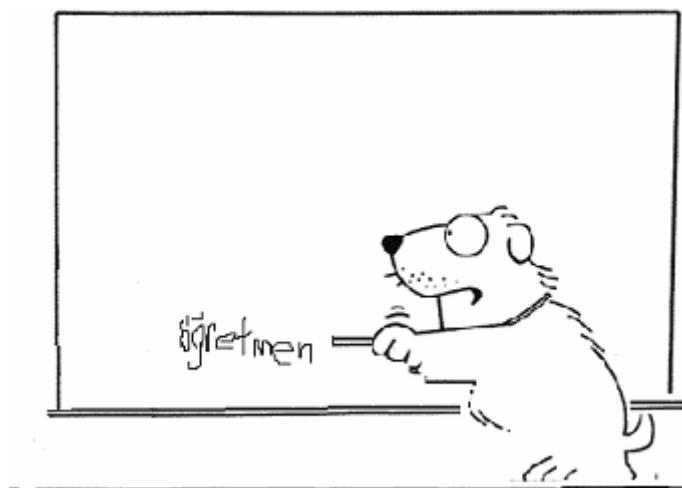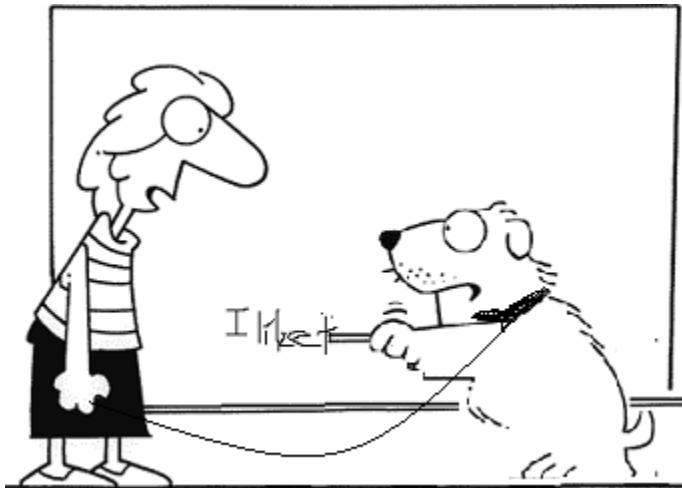
"The truck pulls the bus." (Çekiyor otobüsü kamyon.)
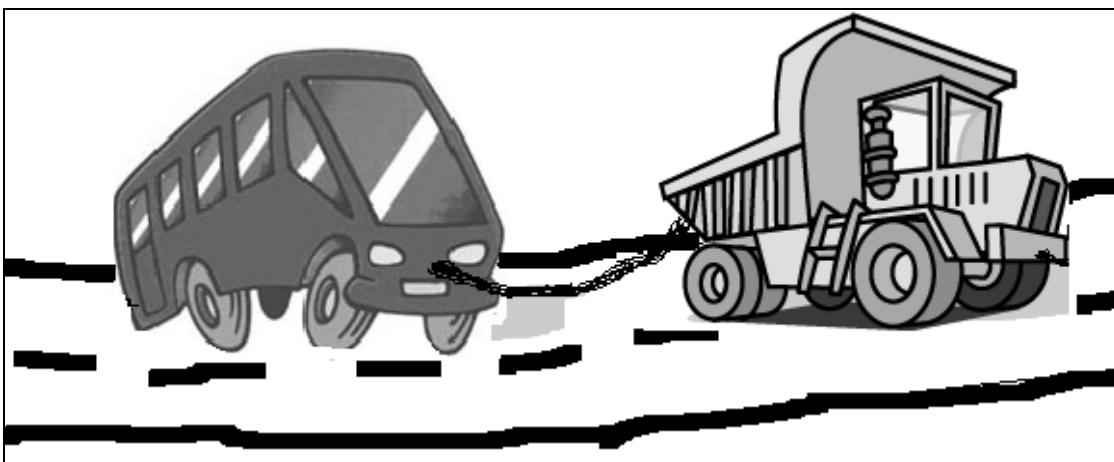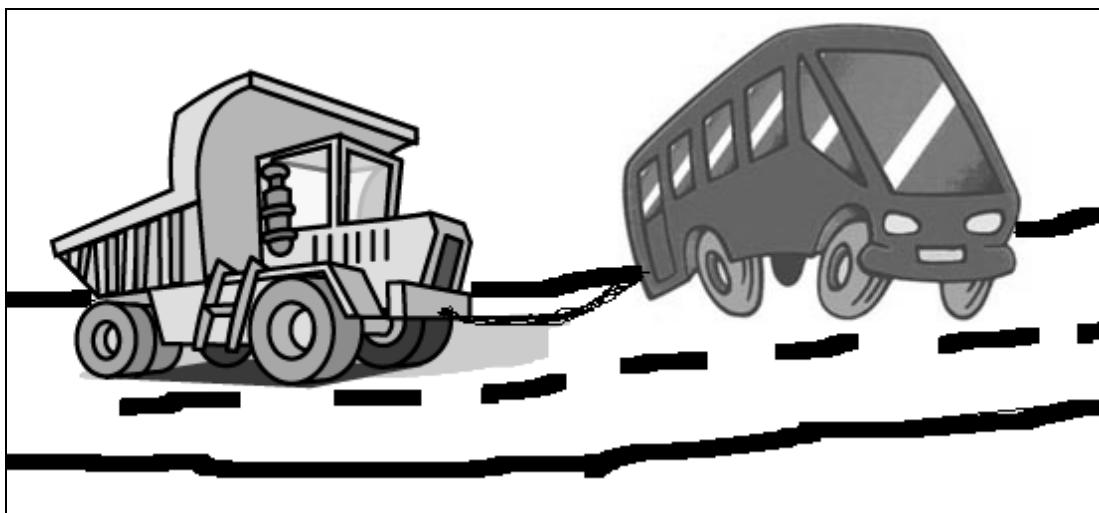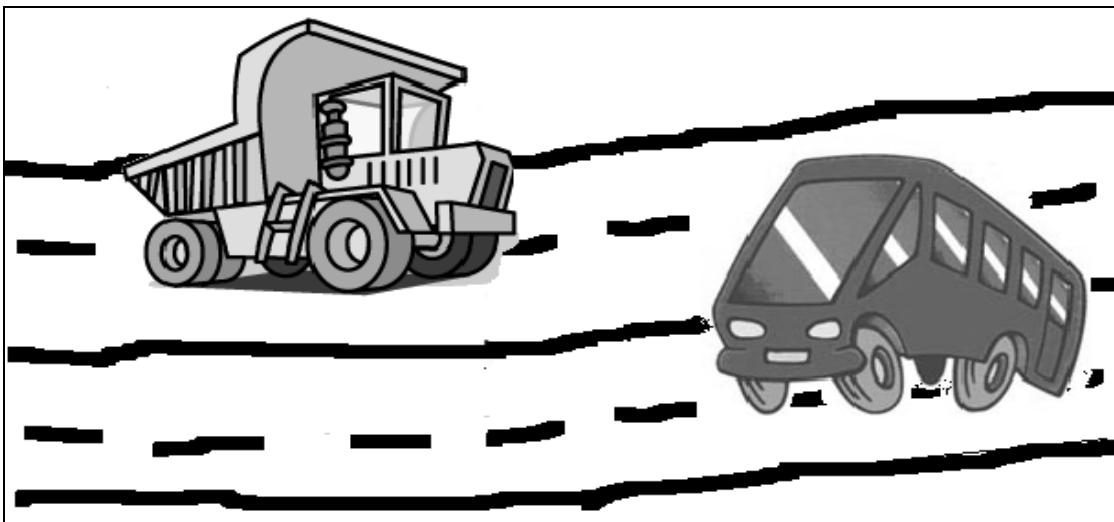
"The banana sees an apple." (Muz elma görüyor.)
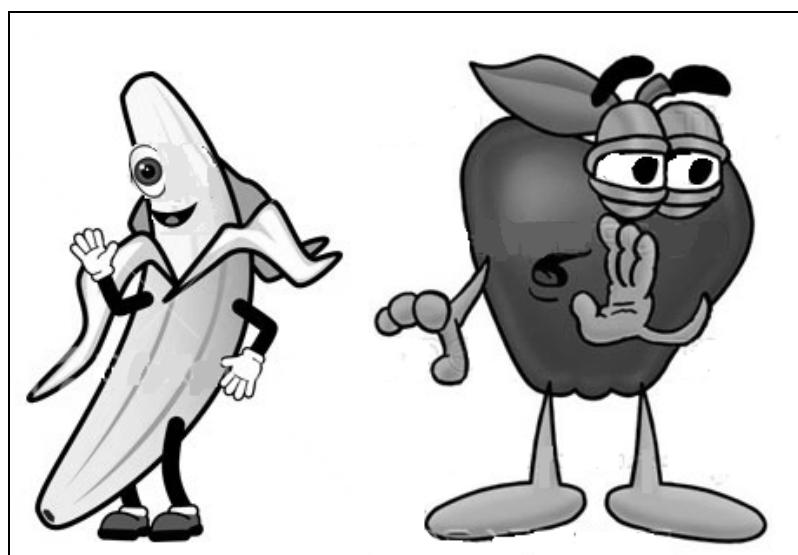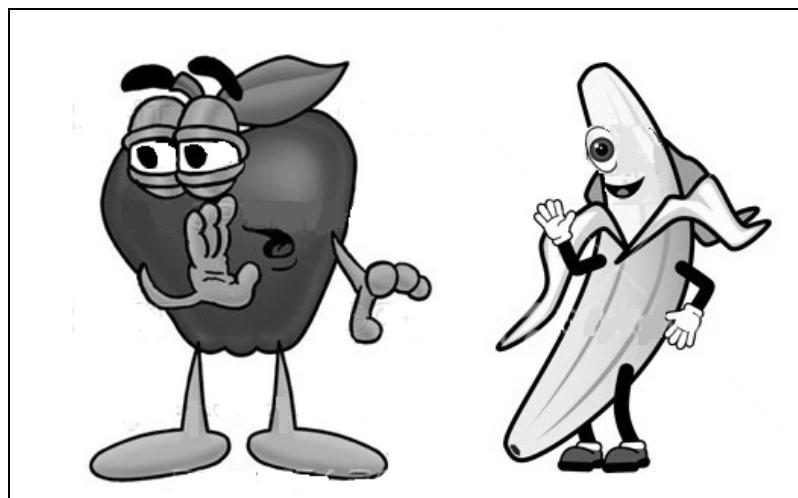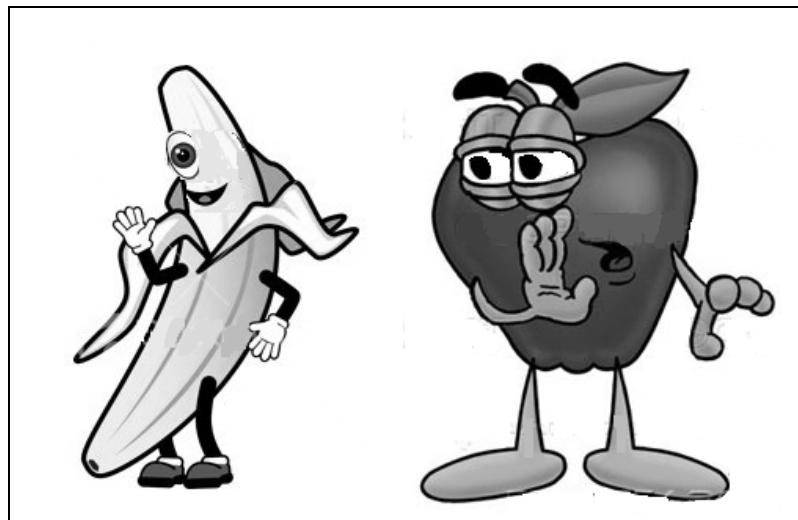
"The girl is passing a boy." (Geçiyor kız erkek.)

"The painter is painting the rabbit." (Ressam tavşanı boyuyor.)
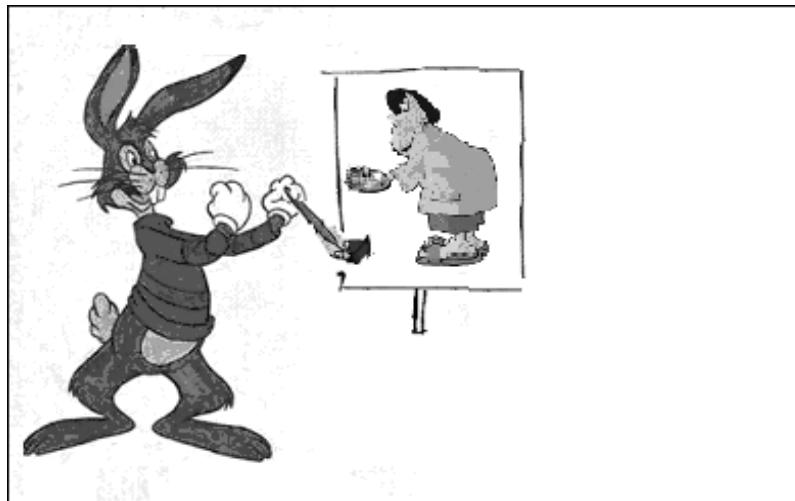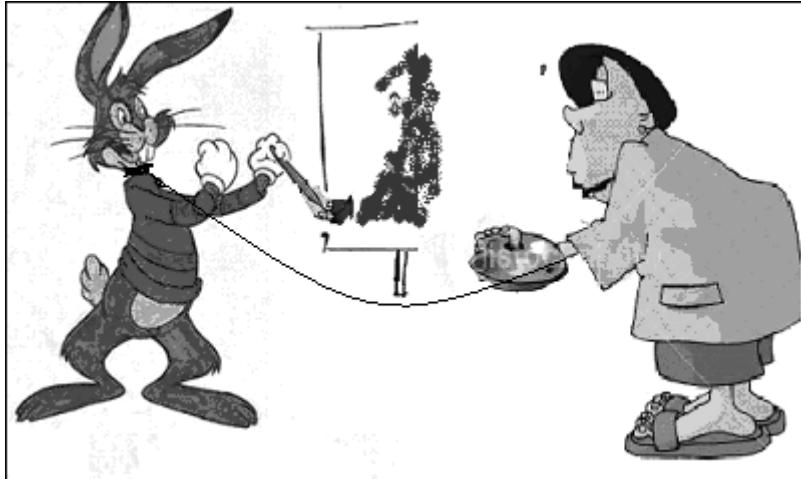
"The mushroom carries the tomato." (Domatesi taşıyor mantar.)
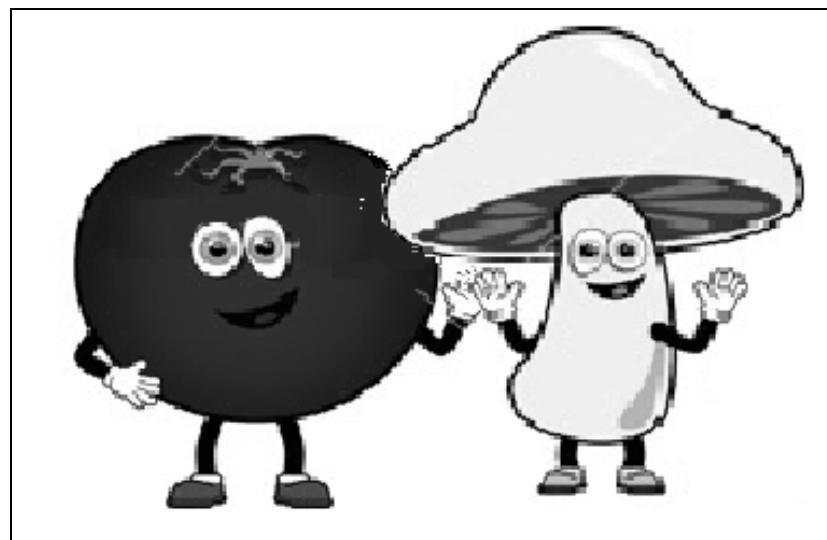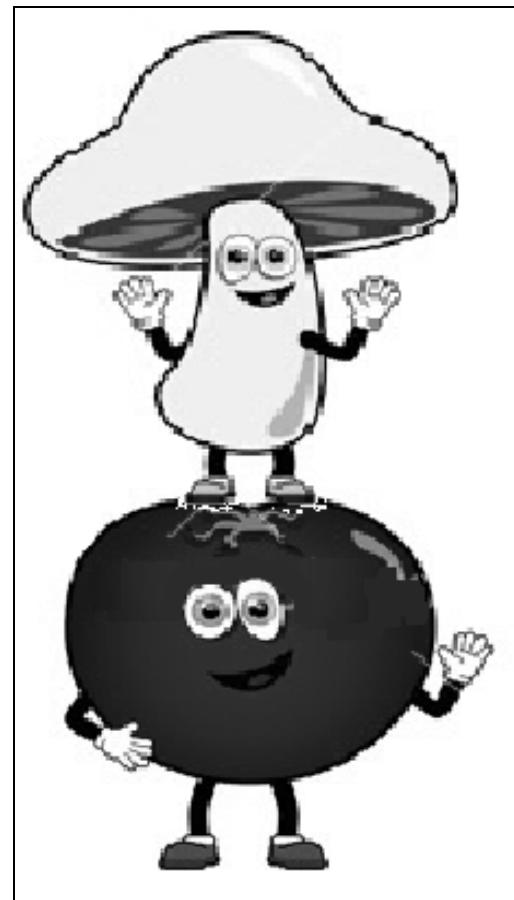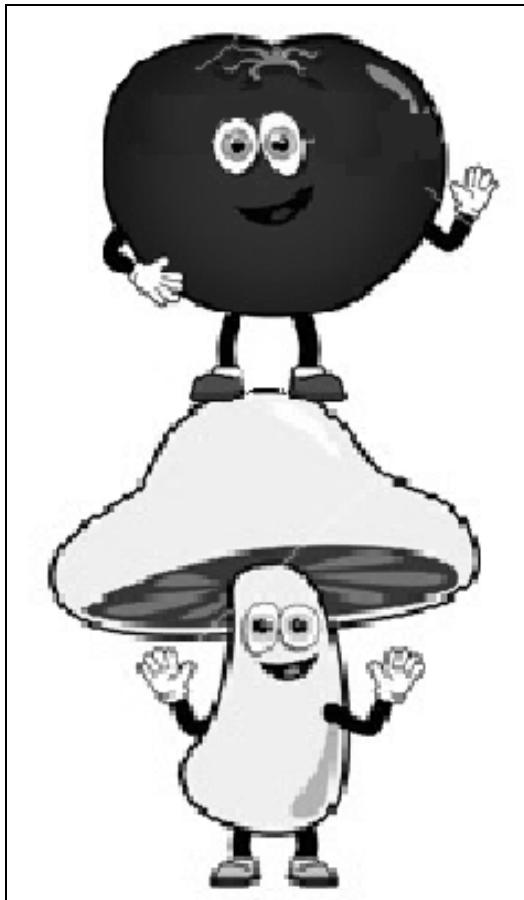
"The woman's cat loves (somebody/something)." (Kadının kedi seviyor)
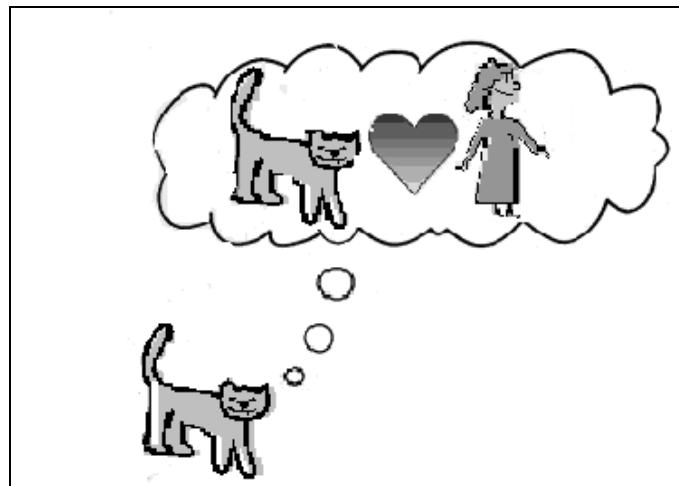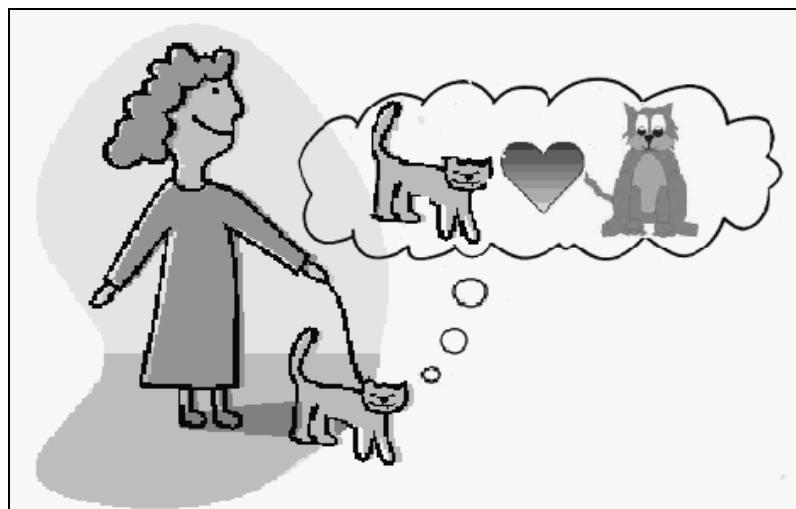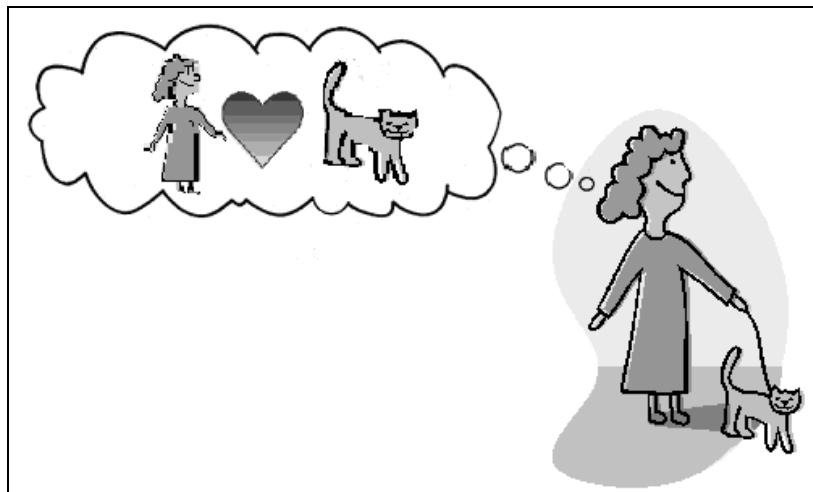
"The man's horse is thinking (about something)." (Adamın at düşünüyor.)
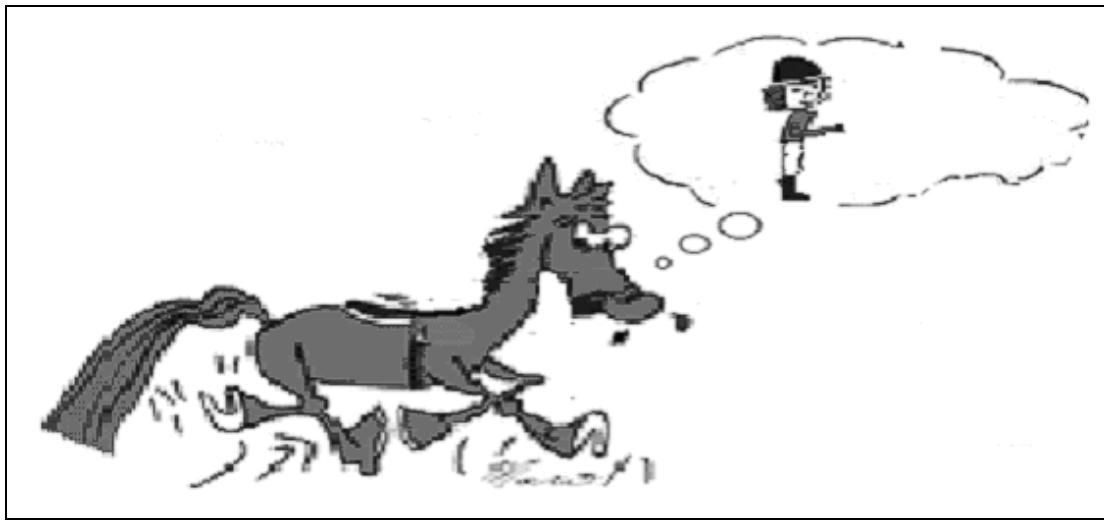
"The watermelon eats a pear." (Armut yiyor karpuz.)
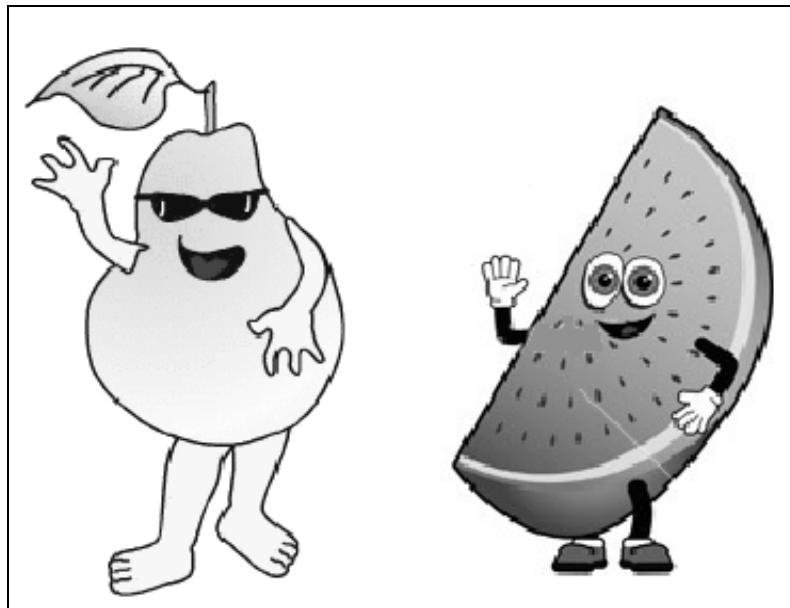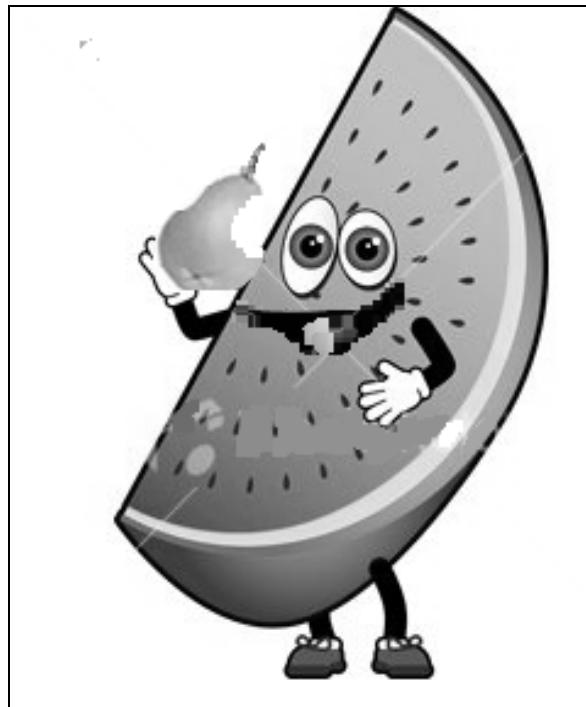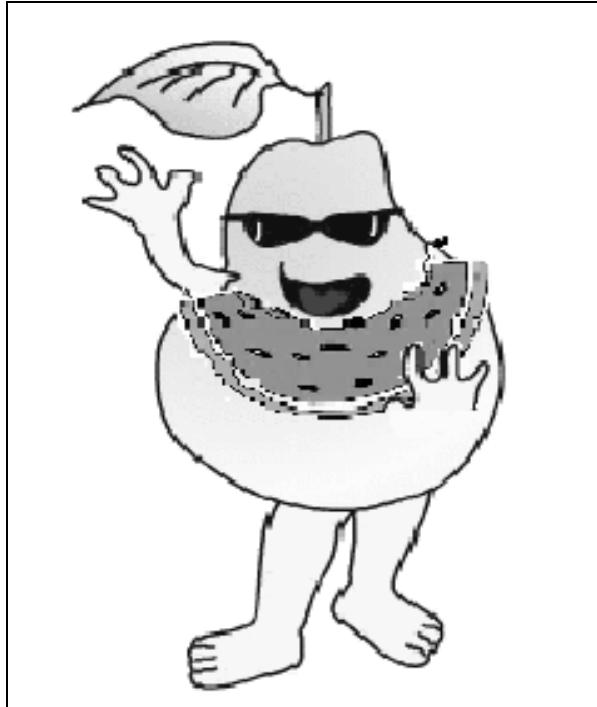
"The dog writes "teacher." (Köpek "öğretmen" yazıyor.)
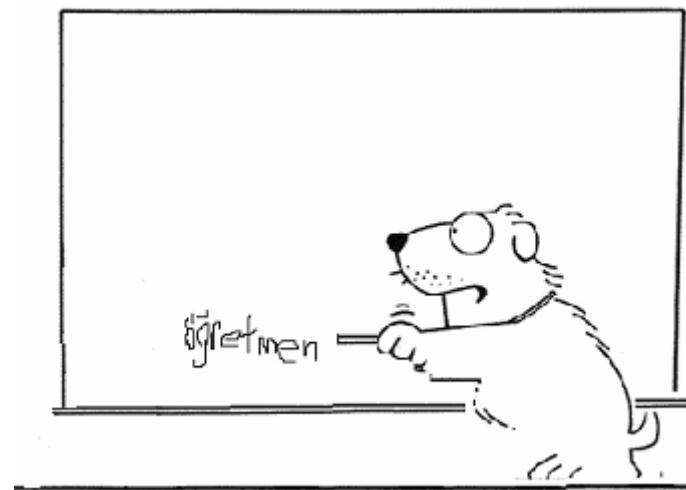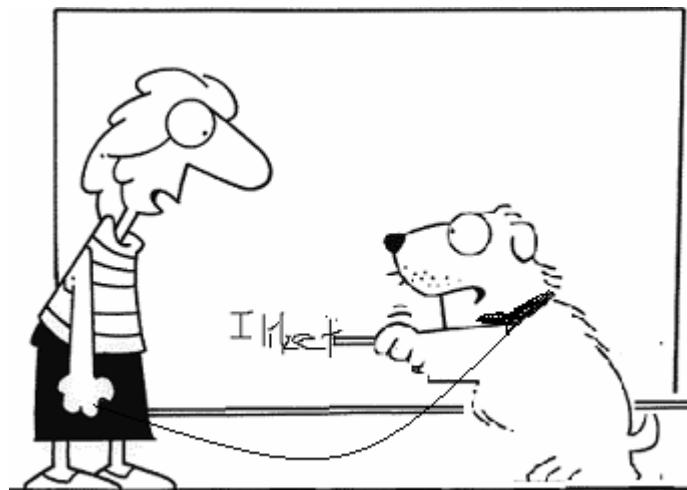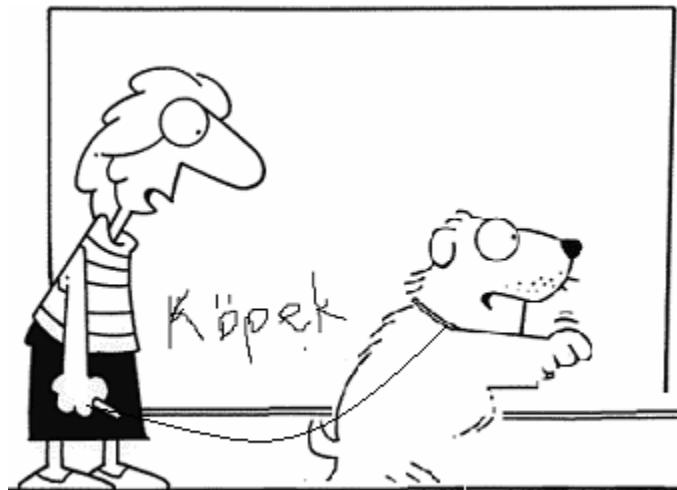
"The boy's rabbit is reading (something)." (Çocuğun tavşan okuyor.)
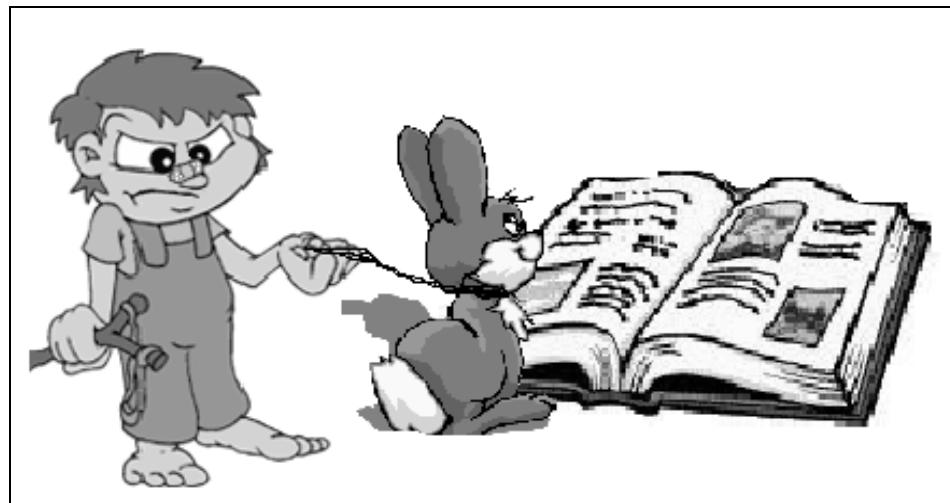
"The truck pulls the bus." (Otobüsü çekiyor kamyon.)
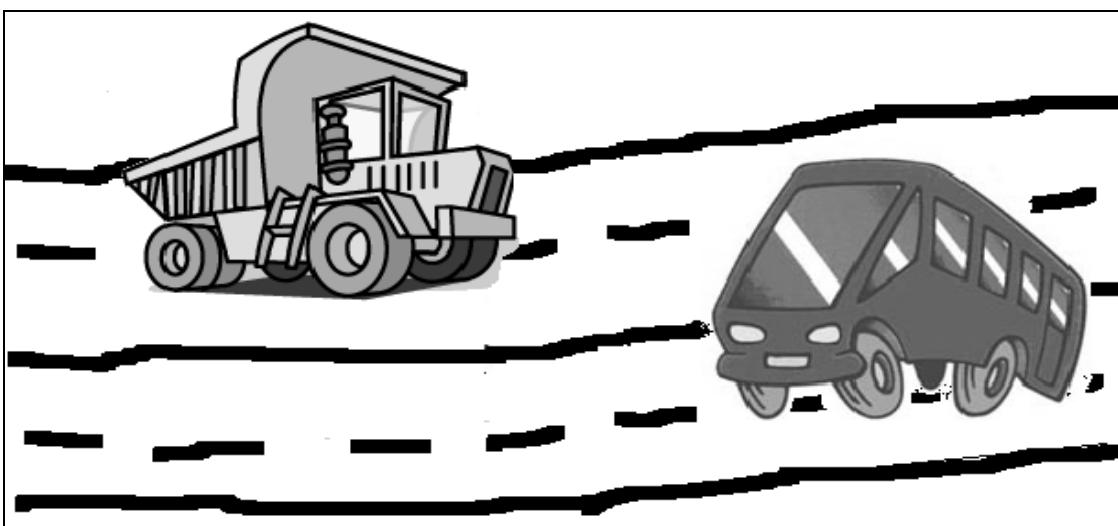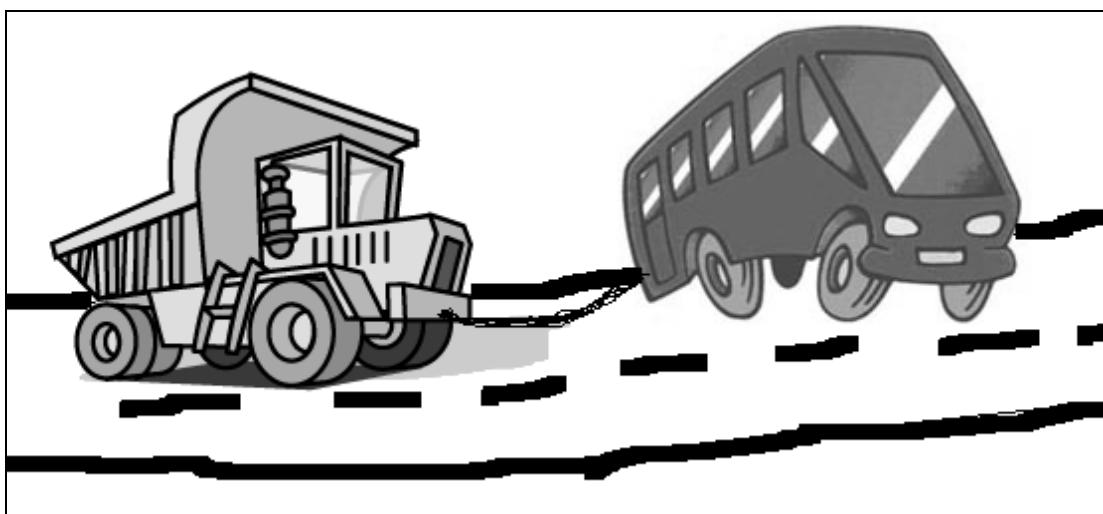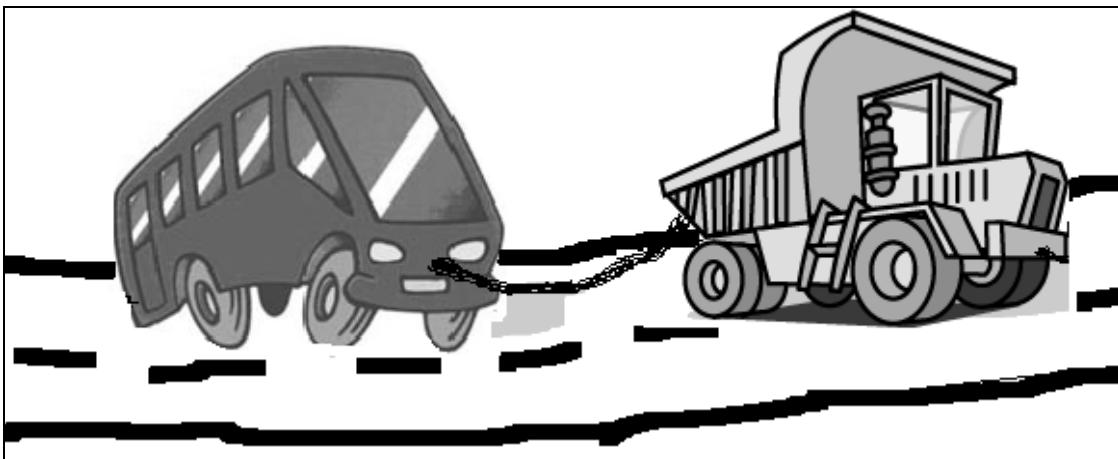
"The horse is thinking (about) the man." (At adamı düşünüyor.)
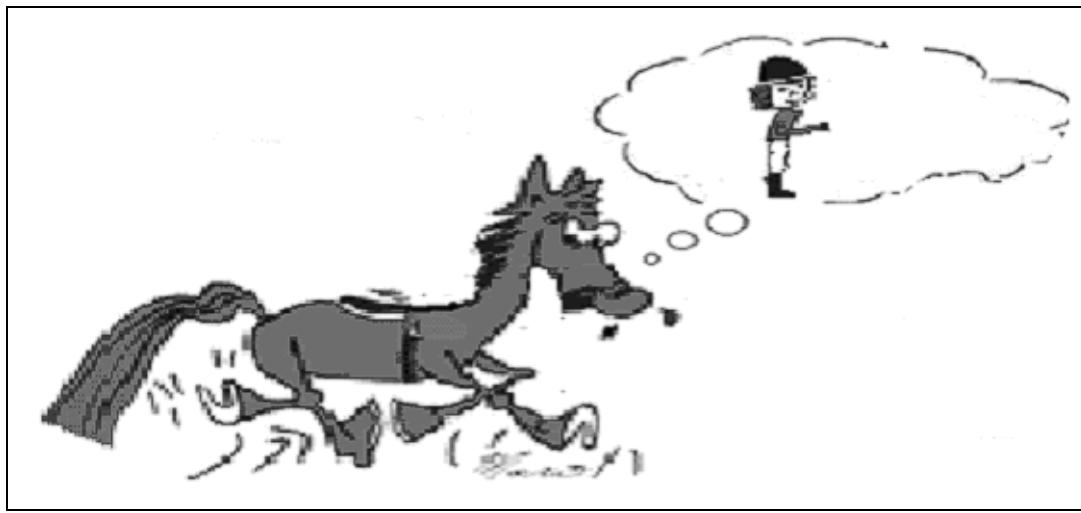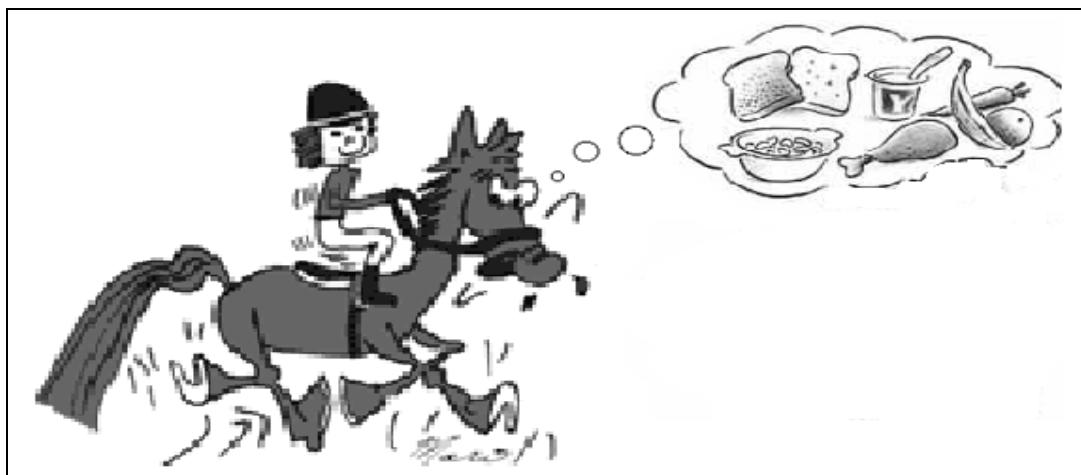
"The banana sees an apple." (Elma görüyor muz.)
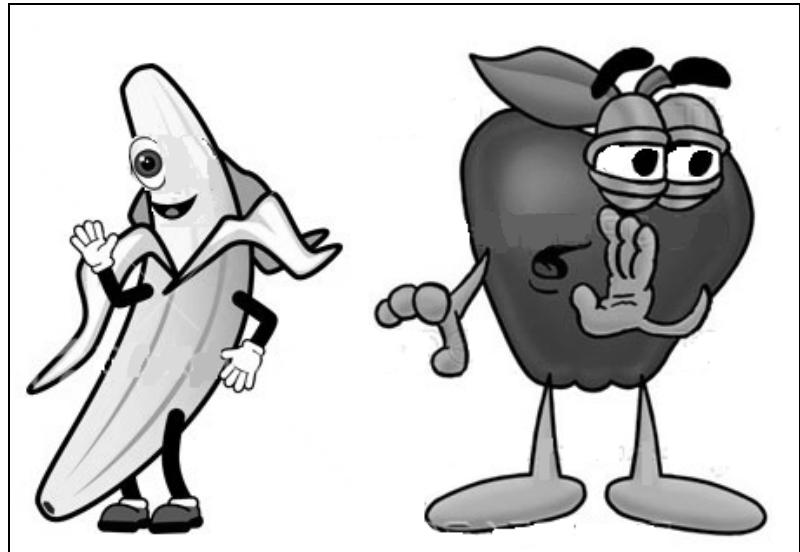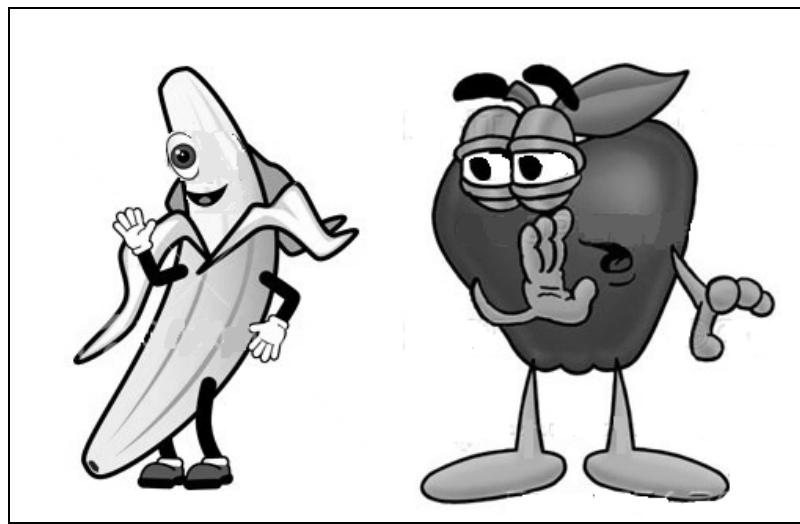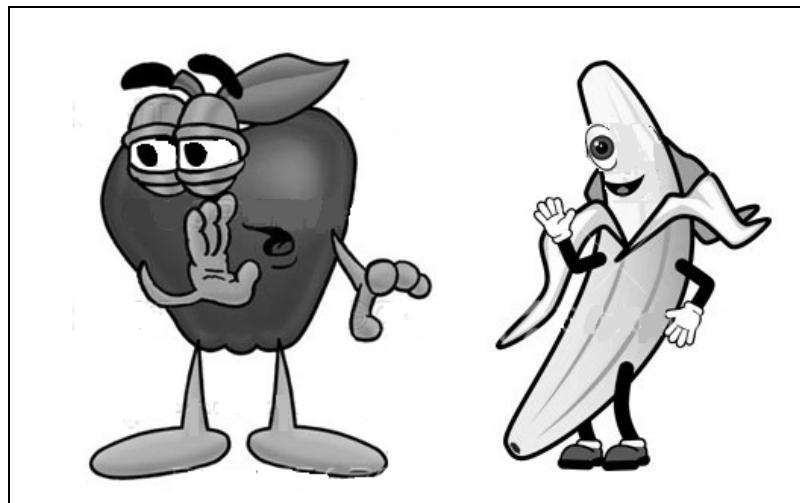
"The watermelon eats a pear." (Yiyor karpuz armut.)
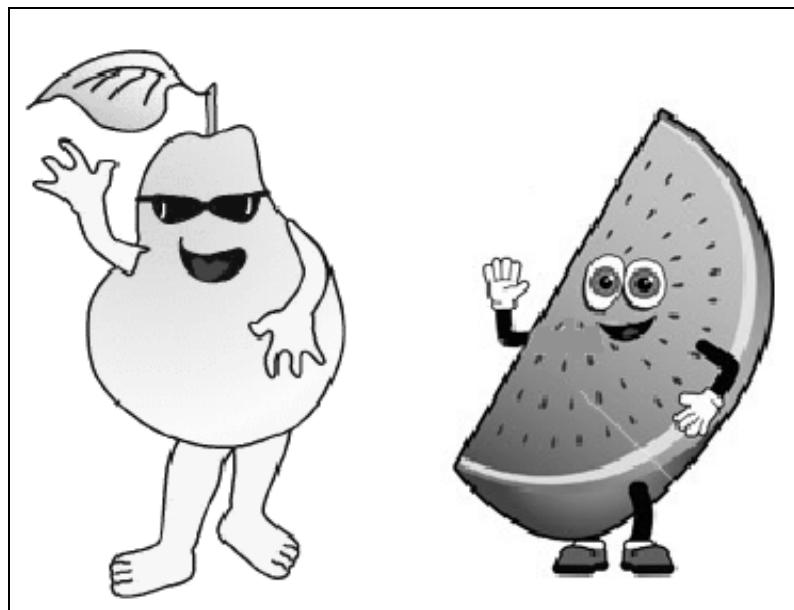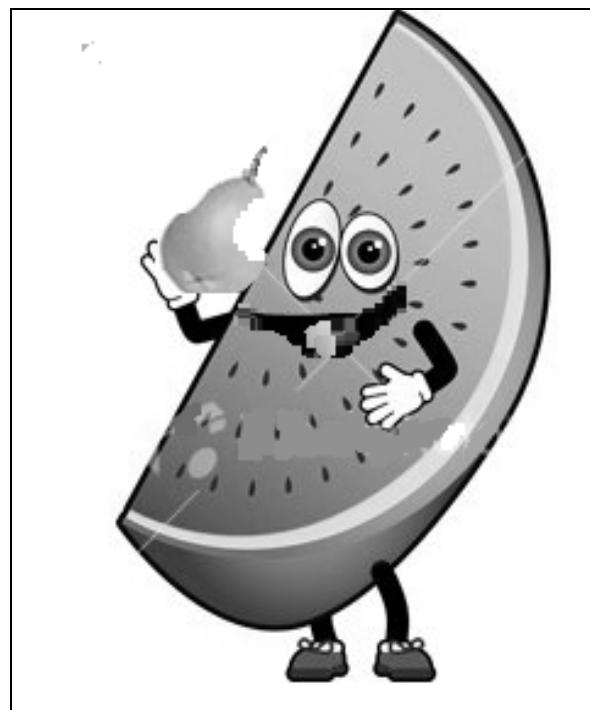
"The girl is passing a boy." (Erkek geçiyor kız.)

"The cat loves the woman." (Kedi kadını seviyor)
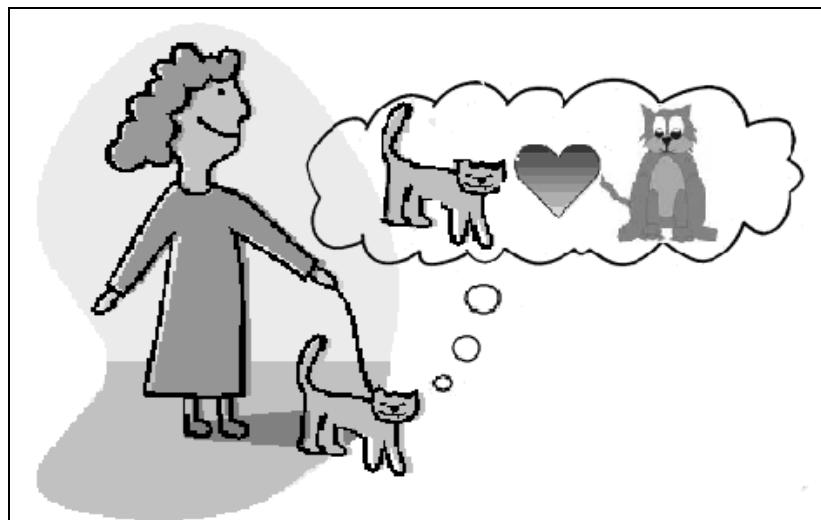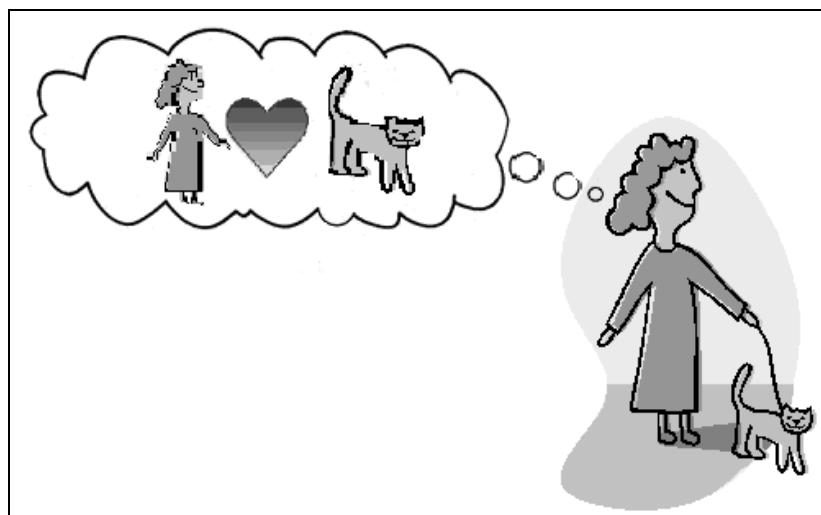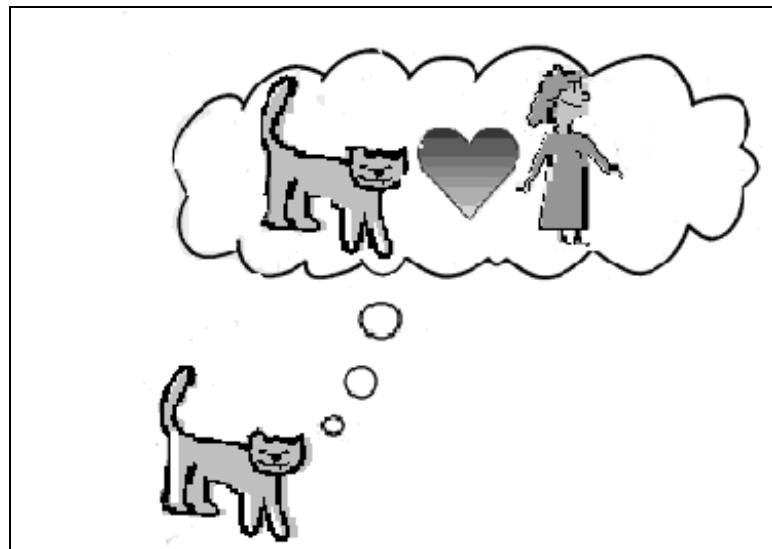
"The rabbit is reading 'boy.'" (Tavşan "çocuğu" okuyor.)
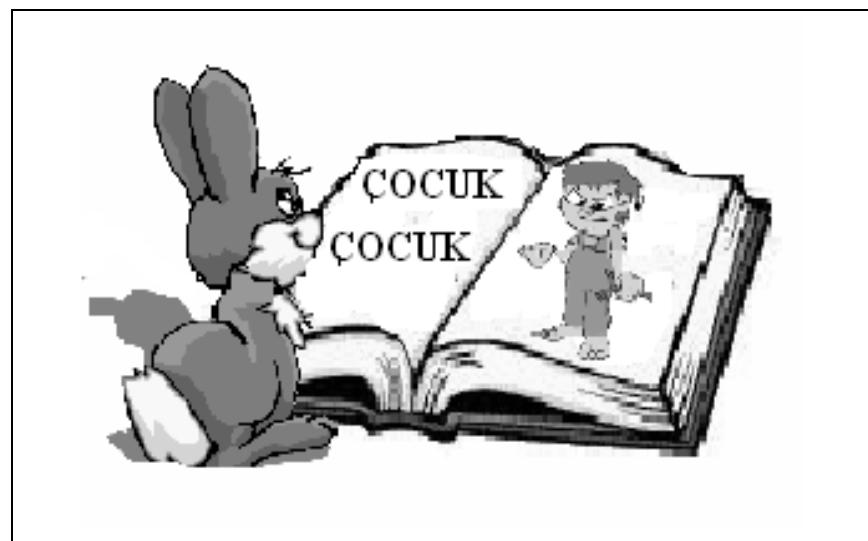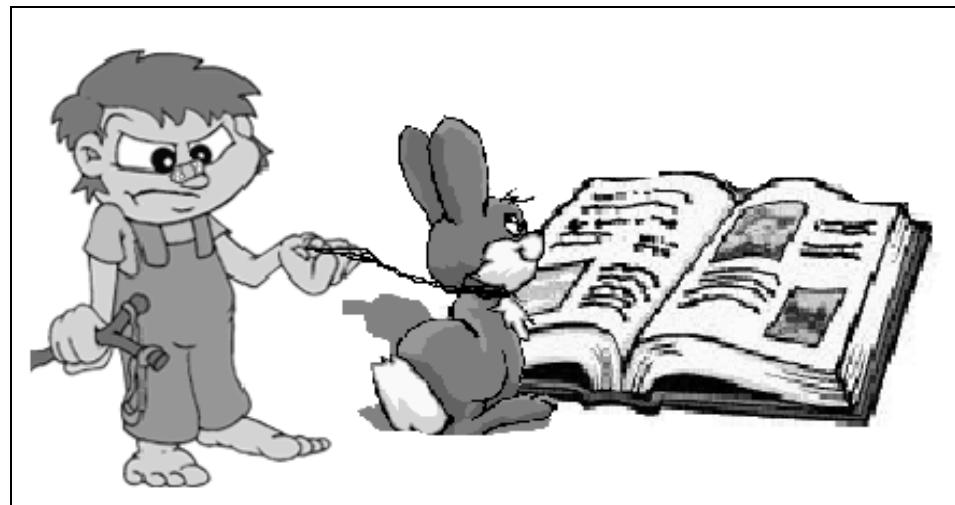
"The painter's rabbit is painting (something)." (Ressamın tavşan boyuyor.)
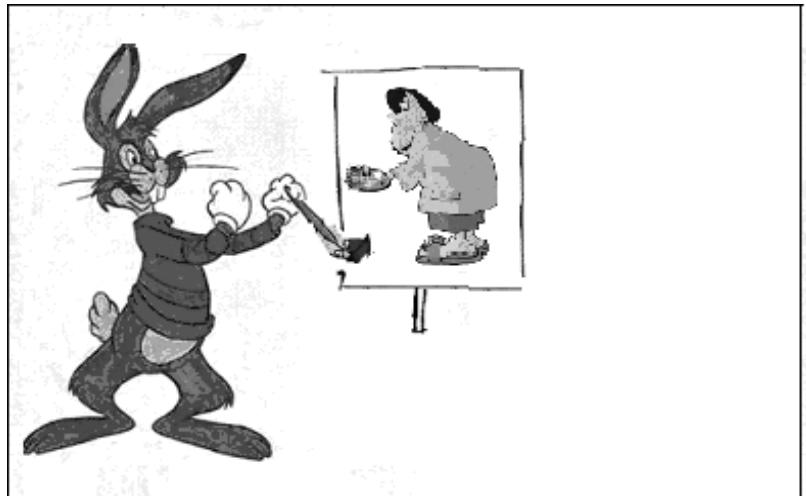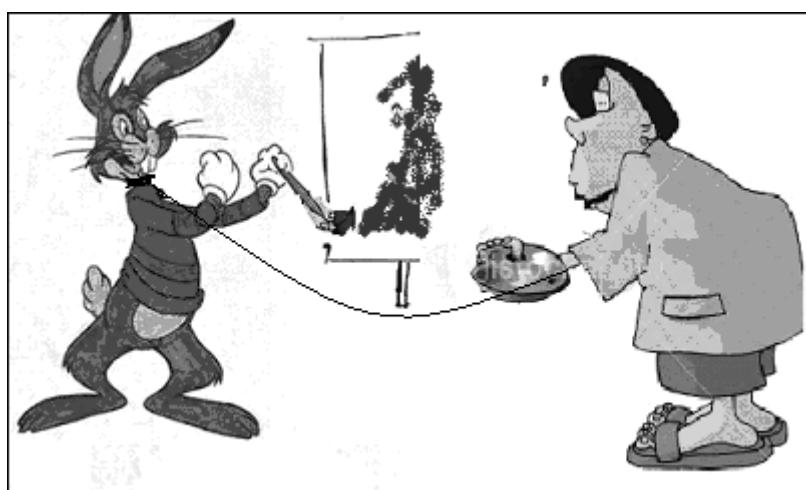
"The banana sees an apple (??)." (Görüyor muz elma.)
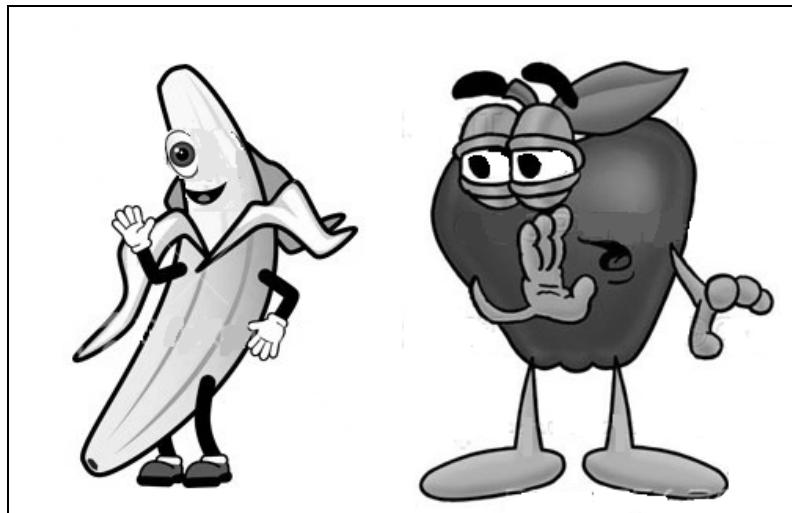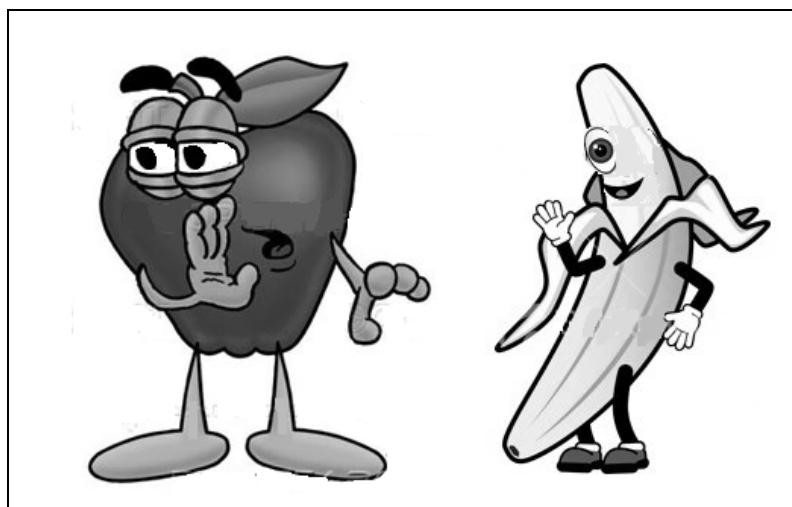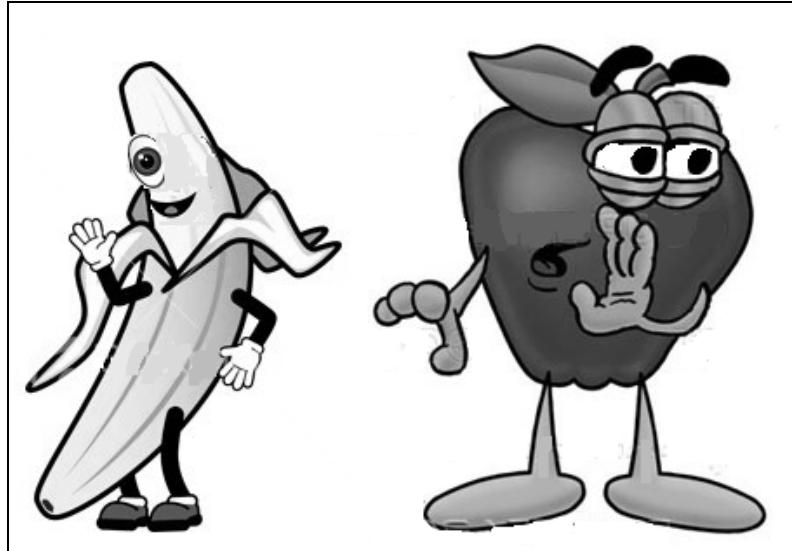
"The mushroom carries the tomato." (Domatesi mantar taşıyor.)
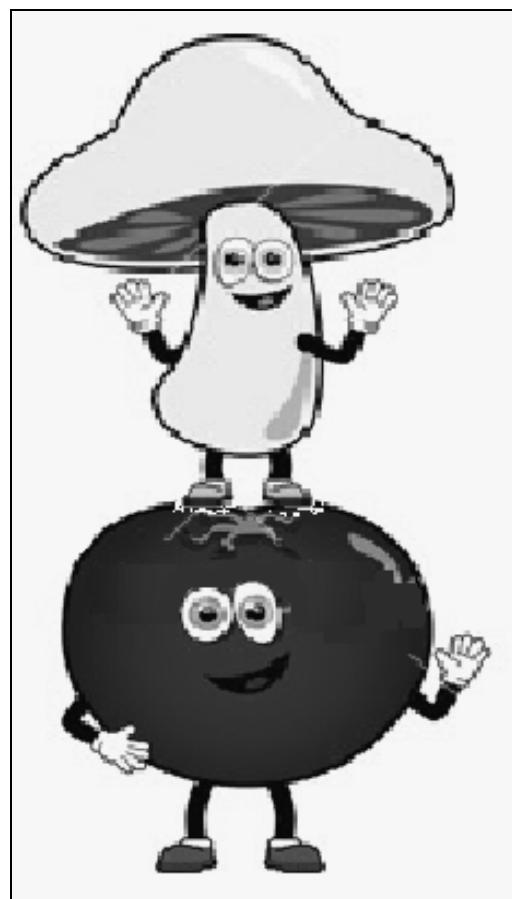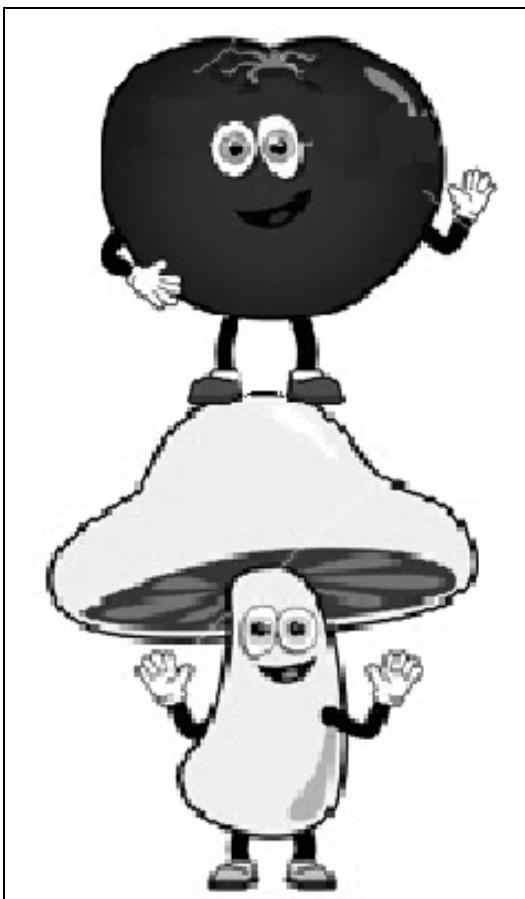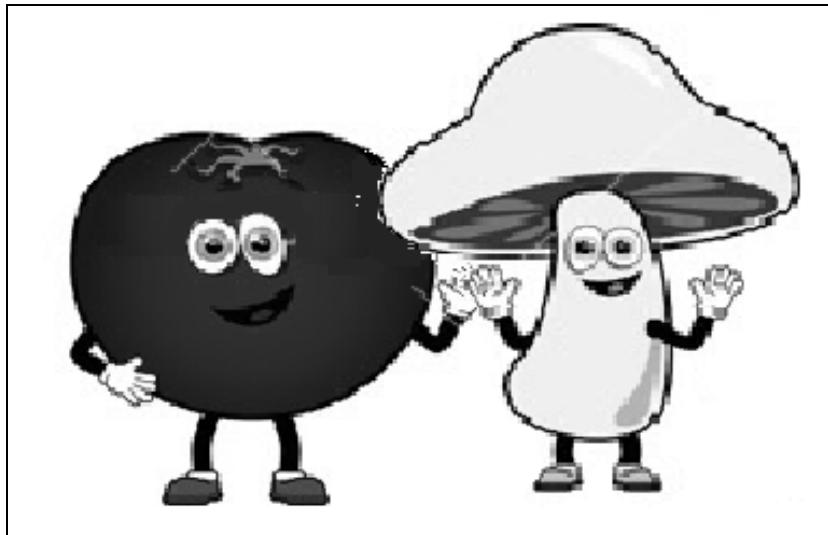
"The watermelon eats a pear." (Karpuz armut yiyor.)
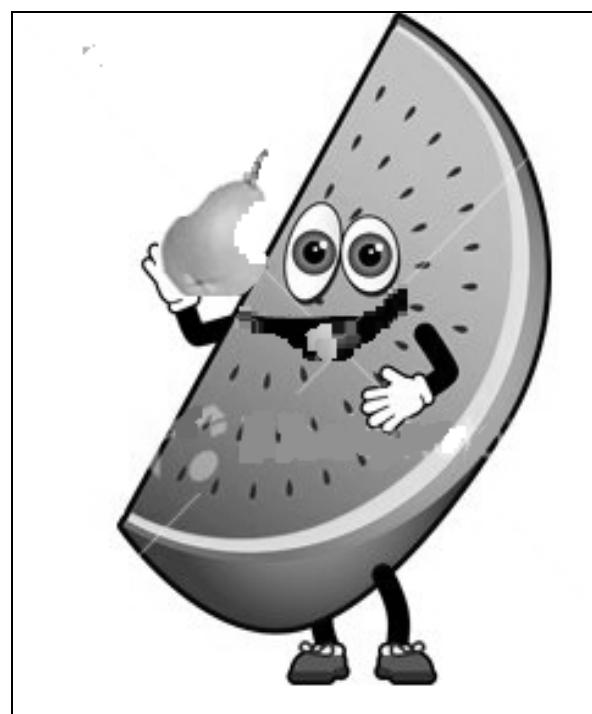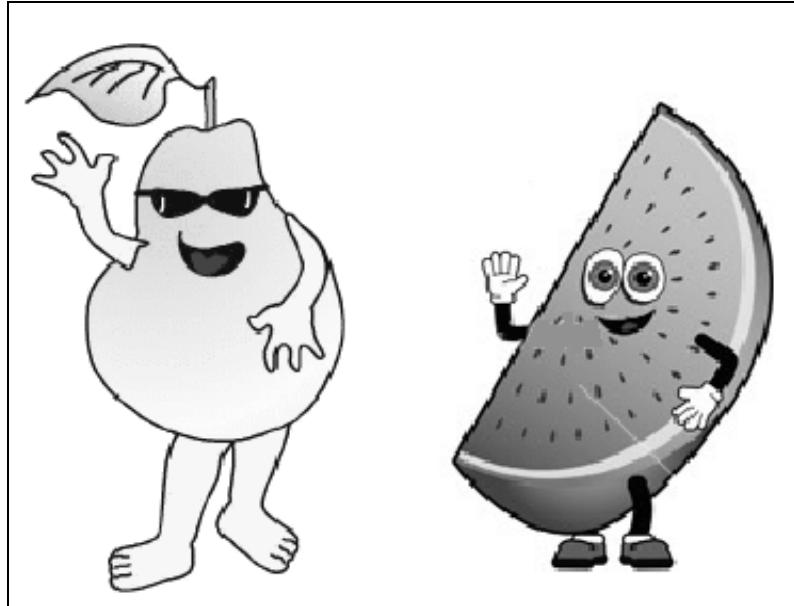
"The truck pulls the bus." (Otobüsü kamyon çekiyor.)
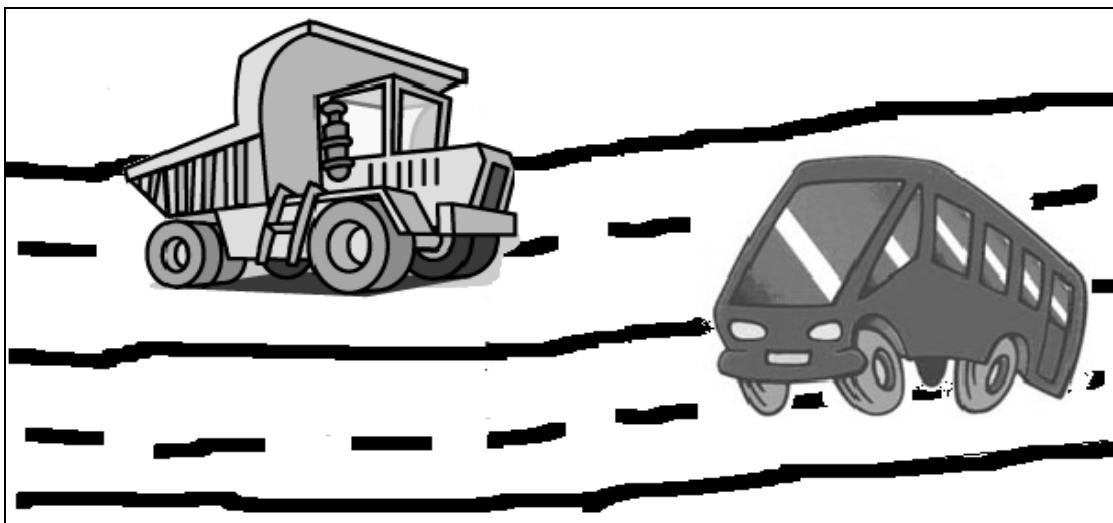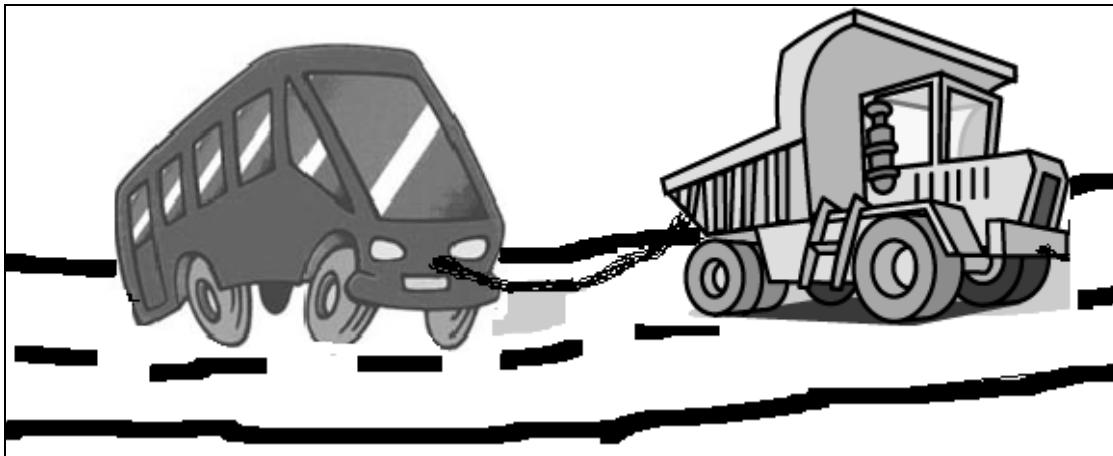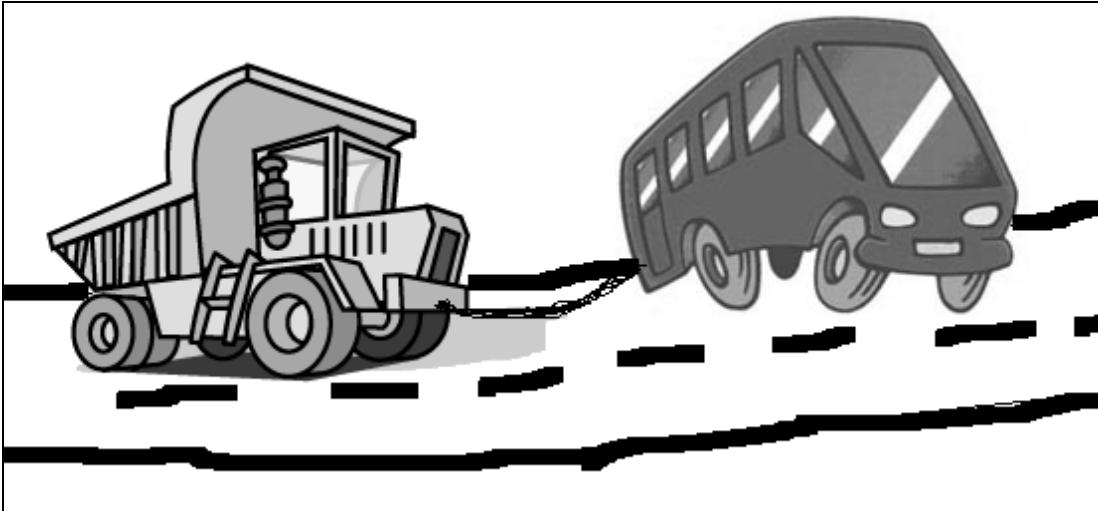
"The girl is passing a boy." (Kız erkek geçiyor.)

"The mushroom carries the tomato." (Taşıyor domatesi mantar.)
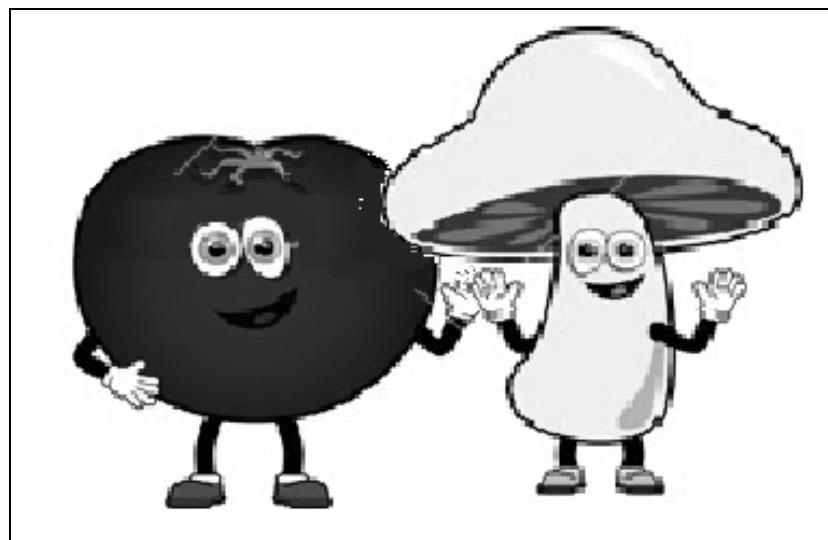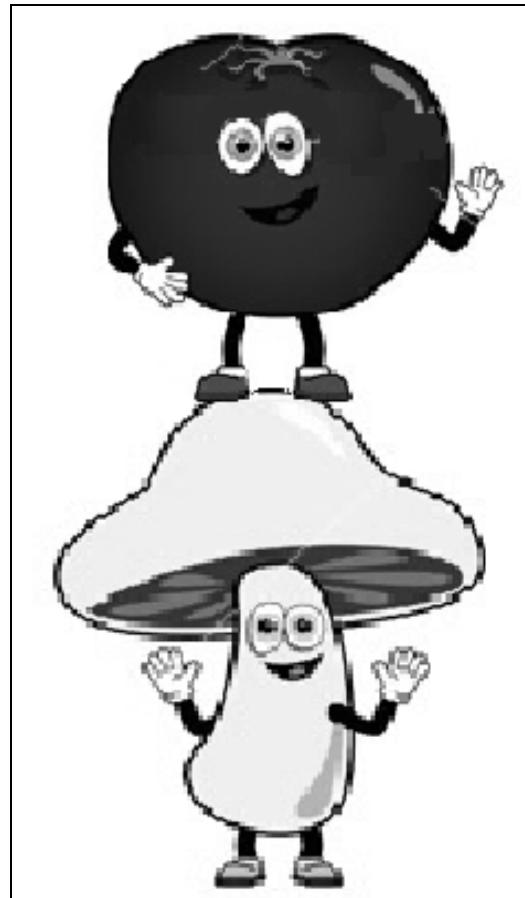
APPENDIX C

PROFICIENCY TEST USED IN TASK 3

The proficiency test used in Task 3 is given below.

Task 3:

The following is a short, two-page proficiency test. Please answer the questions correctly!

I.   VOCABULARY:

A. Write English equivalents of the following Turkish verbs:

Answer Key:

1. çekmek: _____to pull_____
2. görmek: ___ to see_____
3. sevmek: _____to love_____
4. dövmek: _____to beat_____
5. okumak: _____to read_____
6. seyretmek: __to watch_____
7. yemek: _____to eat_____
8. kovalamak: __to chase_____
9. taşımak: _____ to carry_____
10. boyamak: ___ to paint_____
11. düşünmek: ___to think_____
12. öpmek: _____to kiss_____
13. yazmak: _____to write_____
14. aldatmak _____ to look _____
15. direnmek _____to resist, insist_____

B. Match the following words with the corresponding pictures!

1. inek
2. çocuk
3. köpek
4. tavşan
5. kuş
6. kardan adam
7. ayı
8. aslan
9. penguen
10. adam
11. kadın

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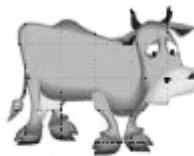
II. GRAMMAR:

Fill in the gaps in the following text! Choose whatever you think is the best word! Conjugate the word if necessary!

Cem her akşam saat sekizden ₁_____kadar ders çalışır. Her gece on birde ₂_____. Yatmadan önce on beş dakika roman ₃_____. Saati altı buçuğa ₄_____. Güzel bir uykudan sonra saatin ₅_____ uyanır. Ancak yataktan kalkmak ₆_____5-10 dakika yatakta oyalanır.

Yediye çeyrek ₇_____ yataktan kalkar. Sonra lavaboya ₈_____ ve elini yüzünü yıkar. Yedide annesinin ₉_____ kahvaltıyı nazlanarak yer. Yediyi çeyrek geçe kahvaltıyı ₁₀ _____ . Sonra tekrar lavaboya gider ve ₁₁_____ fırçalar. Yedi buçuğa kadar okul ₁₂_____ hazırlar. Her şeyi ₁₃_____ zaman, evden çıkar.

Sekize çeyrek kala ₁₄_____ durağında olur. Sonra, okul ₁₅_____ gelir. Etrafı seyrederek ₁₆_____ sekizi çeyrek geçe varır. Sabah töreninden ₁₇_____ saat sekiz buçukta büyük marathon, ₁₈_____ dersler başlar. Bu saat üçe ₁₉_____ sürer. Yorgun bir savaşçı gibi üçte tekrar eve ₂₀_____ .

Ancak yarın okula ₂₁_____, çünkü dün oynarken ₂₂_____ ve ayağını inciltti. Yine de, okula ₂₃_____ istiyor, çünkü arkadaşlarıyla ₂₄_____ çok seviyor. Cem çok ₂₅_____ bir öğrenci!

(Text adapted from: Adım Adım Türkçe Ders Kitabı 1, 2004)

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<u>**Translation of the text:**</u>

Cem studies every evening from 8 o'clock to 9 o'clock. He goes to bed at eleven every night. Before going to bed, for fifteen mintes, he reads novels. He sets the clock for six thirty. After a nice night's sleep, he wakes up with the ringing of the clock. However, he doesn't want to get up; he spends for around 15 more minutes on the bed.

He gets up at fifteen minutes before seven. Then, he goes to the sink and brushes his teeth. He prepares his school goods until seven thirty. When he finishes everything, he leaves home.

He arrives at the bus stop fifteen minutes before eight. Then, the school bus comes. He sits by watching around, and the bus arrives at eight fifteen. After the morning ceremony. At eight thirty, the big marathon, that is, classes start. This continues until three. Like a tired hero, he comes back home at three.

However, he will not go to school tomorrow, because he fell down while playing with the ball and hurt his leg. Nevertheless, he wants to go to school, because he likes playing with his friends. Cem is a very good student.

<u>**Possible Answer Key**</u>:

1. 10'a	10. bitirir	18. yani
2. yatar	11. dişlerini	19. kadar
3. okur	12. eşyalarını	20. döner
4. kurar	13. bitirdiği	21. gitmeyecek
5. çalmasıyla	14. otobüs	22. düştü
6. istemez	15. servisi	23. gitmek
7. kala	16. oturur	24. oynamayı
8. gider	17. sonra	25. iyi
9. yaptığı		

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