Mono/bi-clausality of Turkish Causatives*

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1. Introduction

Crosslinguistically, causatives can give rise to either biclausal or monoclausal structures and they can be formed either periphrastically or morphologically. In Turkish, causatives are formed morphologically and a natural assumption would be that these morphological formations are monoclausal structures. However, as discussions with respect to morphologically formed causatives in Japanese (Matsumoto, 1998) have shown, morphological causatives can also give rise to biclausal structures as well.

Previous work on Turkish causatives (Gibson & Özkaragöz, 1981; Aissen & Hankamer, 1980; Knecht, 1986) has been formulated within Relational Grammar (RG) and has arrived at differing conclusions with respect to the monoclausality (*clause union* in terms of RG) of the construction. Knecht (1986) has supported the ideas of Aissen and Hankamer (1980) on a monoclausal structure whereas Gibson and Özkaragöz (1981) have argued that a biclausal approach is more appropriate. Knecht (1986) gives different RG-based explanations for the evidence Gibson and Özkaragöz (1981) proposed in favor of biclausality.

In this paper we reexamine the structural representation of causatives by applying several language dependent tests to decide whether the causative constructions are indeed monoclausal, that is, with a single predicate, or biclausal, that is, with an embedded clause. Section 2 provides the basic data with respect to causative formation in Turkish. Section 3 introduces the possible tests that can be applied to decide whether the causatives are monoclausal or biclausal, with subsections that discuss these tests in more detail. We conclude that the majority of the tests point towards a monoclausal status of Turkish causatives and present an analysis as part of an implementation of a Turkish grammar that is being built using Lexical-Functional Grammar (LFG) as part of the ParGram project in Section 4. We summarize our findings in Section 5.

2. Causatives

Causatives are constructed morphologically in Turkish with the minor exceptions of lexical causatives. There are two productive causative morphemes: *-DHr* and *-t*.[1] More than one causative suffix can be attached to the verb. Double causatives are used frequently, triple causatives are also encountered but further ones are not applicable.

(1) a. kedi   uyu-du
        cat.NOM sleep-PAST
        'The cat slept.'

b. çocuk   kedi-yi uyu-t-tu
   child.NOM cat-ACC sleep-CAUS-PAST
   'The child made the cat sleep.'

(2) a. köpek   kedi-yi kovala-dı
       dog.NOM cat-ACC chase-PAST
       'The dog chased the cat.'

   b. çocuk   köpeğ-e kedi-yi kovala-t-tı
      child.NOM dog-DAT cat-ACC chase-CAUS-PAST
      'The child made the dog chase the cat.'

(1) and (2) exemplify causativizations of an intransitive verb and a transitive verb respectively. The nominative subject *kedi* 'cat' becomes accusative when causativized. If the verb is transitive, as in (2), the nominative subject *köpek* 'dog' becomes dative and the accusative object *kediyi* 'cat' preserves its case.

When the verb in question subcategorizes for an object with a case marker other than accusative, the causativization patterns differ from the verbs with canonical objects. The nominative subject *kedi* 'cat' becomes accusative and the ablative object *köpekten* 'from the dog' preserves its case. See Çetinoğlu and Butt (2008) for some further discussion of causativization of non-canonical objects.

(3) a. kedi   köpek-ten kork-tu
       cat.NOM dog-ABL   fear-PAST.3SG
       'The cat feared the dog.'

   b. çocuk   kedi-yi köpek-ten kork-ut-tu
      child.NOM cat-ACC dog-ABL   fear-CAUS-PAST.3SG
      'The child made the cat fear the dog.'

Due to space limitations, this paper focuses on only the single causativization, and the examples in the tests are restricted to transitive verbs with canonical objects. However, all the tests presented in the paper also apply to the other types of causatives.

3. Causatives: Monoclausal or biclausal?

There are several language dependent tests to decide whether the causative constructions are monoclausal or biclausal. Butt (2003) uses object agreement, anaphora, and control for Urdu and also gives examples of clitic climbing for French (Rosen, 1989) and cooccurrence of negative polarity items for Korean (Choi, 2005). Matsumoto (1998) and Yokota (2001) use subject honorification, passivization, pronominal binding, control and adjunct interpretation for Japanese. Yokota (2001) also tests the double-*o* constraint, and *shika-na(i)* (only-Neg) construction for functional monoclausality. Among these possible tests, five are applicable to Turkish: Passivization, Reflexive Binding, Control, Adjunct Interpretation, and Negative Polarity Items. For all the tests, the sample sentence is first used in causatives and then in a 'tell' construction to compare and contrast the mono/biclausality of causatives with a clearly biclausal construction (cf. Butt, 1995).

3.1 Passivization

In the passivization test, the behavior of the object of the base verb is observed when the base verb is first causativized and then passivized. The object of the base verb can be the subject of the passivized causativized sentence, which indicates that the causative construction is monoclausal. (4a) and (4b) give the base sentence and causativized sentence respectively.

(4) a. süt-ü   bütün çocuk-lar-a   iç-ir-di
        milk-ACC all   child-PL-DAT drink-CAUS-PAST
        '(S/he) made all children drink the milk.'

     b. süt   bütün çocuk-lar-a   içir-il-di
        milk.NOM all   child-PL-DAT drink-CAUS-PASS-PAST
        'All children were made to drink milk.'

Süt 'milk', which is the object of the base verb *iç* 'drink' and also the object of the causativized verb *içir* 'make drink', is the subject of the passivized causativized verb. There is no clausal barrier that prevents the innermost object behave as a subject through the causativization and passivization processes.

The difference can be observed by comparing the causative construction with a 'tell' construction where the 'drink milk' clause is embedded by the 'tell' matrix verb in an infinitive. Here, the embedded object cannot become the subject in the passive version (instead, a different construction is used in which the entire infinitive 'children drink the milk' functions as the subject of the construction).

(5) a. bütün çocuk-lar-a   süt-ü   iç-me-leri-ni   söyle-di
        all   child-PL-DAT milk-ACC drink-INF-POSS-ACC tell-PAST
        '(S/he) told all children to drink the milk.'

     b. *süt   bütün çocuk-lar-a   iç-me-leri   söyle-n-di
        milk.NOM all   child-PL-DAT drink-INF-POSS.NOM tell-PASS-PAST
        'All children were told to drink the milk.'

In sum, data from passivization exhibits a clear difference between causatives and an embedded infinitive as in the 'tell' construction. In particular, in the casuative, the "embedded" object can be passivized, indicating that it is in fact an object argument of a monoclausal, albeit complex predication.

3.2 Reflexive binding

Reflexive binding is a further possible test for monoclausality, as reflexives crosslinguistically tend to be clause-bound. However, this test is also tricky, since it may not refer to syntactic boundaries, but operate on semantic grounds. (6) is given parallel to (Yokota, 2001), again with its 'tell' construction. As can be seen, the reflexive pronoun *kendi* 'self' can be bound to both the syntactic and the logical subjects, both in causative and tell constructions.

(6)   a. Ali$_i$ Arda'-ya$_j$ kendi-ni$_{i/j}$ savun-dur-du
         Ali.NOM Arda-DAT him(self)-ACC defend-CAUS-PAST
         'Ali made Arda defend him(self).'

      b. Ali$_i$ Arda'-ya$_j$ kendi-ni$_{i/j}$ savun-ma-sı-nı   söyle-di
         Ali.NOM Arda-DAT him(self)-ACC defend-INF-POSS-ACC tell-PAST
         'Ali told Arda to defend him(self).'

Given that the reflexive could be sensitive to logical subjects, rather than synactic subjects (Mohanan, 1994), this test is thus inconclusive with respect to monoclausality in Turkish.

3.3 Control

Syntactic control is a well-established crosslinguistic test for subjecthood. With respect to causatives, it has been used for both Urdu and Japanese. In Urdu, control clauses differ with respect to morphological causatives versus the biclausal 'tell' construction, clearly indicating that causatives are monoclausal (Butt, 2003). In Japanese, however, the situation is more complex, based on the arguments of Matsumoto (1998) and Yokota (2001). (7a) is parallel to examples in Matsumoto (1998).

(7)   a. Can$_i$ çocuğ-a$_j$ [pro$_{i/j}$ televizyon seyred-er-ken]   çorap-lar-ı   giy-dir-di
         Can.NOM child-DAT   television watch-AOR-while sock-PL-ACC wear-CAUS-PAST
         'Can made the child put on the socks while watching television.'

      b. Can$_i$ çocuğ-a$_j$ [pro$_j$ televizyon seyred-er-ken]   çorap-lar-ı
         Can.NOM child-DAT   televizyon watch-AOR-while sock-PL-ACC

         giy-me-si-ni   söyle-di
         wear-INF-POSS-ACC tell-PAST
         'Can told the child to put on the socks, while watching television.'

Turkish patterns similarly to Japanese (Yokota, 2001). In causative sentences, as in (7a), subject of the control clause can be controlled either by the subject of the base verb or by the agent (logical subject) of the causativized verb. In (7b), on the contrary, the subject of the control clause is controlled by the matrix object only. We take it to be significant that the causative and the biclausal 'tell' construction do not pattern parallel, but show differences.

3.4 Adjunct interpretation

Matsumoto (1998) and Yokota (2001) give examples of adjunct interpretation in the discussion of mono/biclausality of Japanese causatives. Whether manner adverbs are interpreted with respect to the base verb or the causativized verb, or both, can give us an idea of the structure of the causatives. In (8), the adverb is interpreted with respect to the causer (mother), not the causee (baby), which is taken to be clear evidence for monoclausality. For the interpretation 'the baby is sleeping reluctantly', an adjective modifying the baby should be used instead of an adverb.

(8) anne   bebeğ-i   isteksizce uyu-t-tu
    mother.NOM baby-ACC reluctantly sleep-CAUS-PAST
    'The mother reluctantly made the baby sleep.'

Now let us compare the causative data with that of the biclausal 'tell' construction in (9). Here, there are two possible interpretations, as the adverb 'reluctantly' can apply either within the matrix clause (the mother was reluctant) or the embedded clause (the sleeping of the baby was reluctant). We thus again have a clear contrast between the causative and a biclausal construction.

(9) anne   bebeğ-e   isteksizce uyu-ma-sı-nı   söyle-di
    mother.NOM baby-DAT reluctantly sleep-INF-POSS-ACC tell-PAST
    'The mother told the baby to sleep reluctantly.'
    'The mother reluctantly told the baby to sleep.'

3.5 Negative polarity items
We now turn to the last test and one that has been proven to be quite robust as a test for monoclausality, namely negative polarity (cf. Choi, 2005). The scope of a negative polarity item tends to be clause-bound. In Turkish, this plays out as follows: the pronoun *hiç kimse* 'anybody' in conjunction with the negative suffix *-mA* means *nobody* ((10)). (11) gives a causative sentence with *hiç kimse*. The negative pronoun and the negative suffix should be in the same clause therefore this example favors monoclausal constructions.

(10) hiç kimse   kestane   yedi   mi / yemedi /   *yedi
     anybody.NOM chestnut.NOM eat.PAST QUES/ eat.NEG.PAST/ eat.PAST
     'Did anybody eat chestnuts?/Nobody ate chestnuts'
(11) hiç kimse   Cem'-e   kestane   ye-dir-me-di
     nobody.NOM Cem-DAT chestnut-NOM eat-CAUS-NEG-PAST
     'Nobody let Cem eat chestnuts.',
     'Nobody fed Cem with chestnuts.'

We can see the difference better by using the same items in a tell construction as in (12). In (12a) *hiç kimse* and the negative marker on the verb are in the same clause, so the sentence is grammatical, but (12b) exemplifies an ungrammatical sentence where *hiç kimse* is used in the matrix verb and *-mA* negates the verb of the inner clause.

(12) a. hiç kimse   Cem'-e   kestane   ye-me-si-ni   söyle-me-di
        anybody.NOM Cem-DAT chestnut-NOM eat-INF-POSS-ACC tell-NEG-PAST
        'Nobody told Cem to eat chestnuts'
     b. *hiç kimse   Cem'-e   kestane   ye-me-me-si-ni   söyle-di
        anybody.NOM Cem-DAT chestnut-NOM eat-NEG-INF-POSS-ACC tell-PAST
        'Nobody told Cem not to eat chestnuts'

In order to test the behavior of *anybody* as a part of the embedded clause, we introduce (13). In (13a), the negation is in the matrix sentence but *hiç kimse* is in the embedded clause, therefore it is ungrammatical as expected.[2] Satisfying the *same clause* rule, (13b) is

grammatical. Thus, the interaction of causatives with negative polarity again demonstrates that causatives do not pattern along the lines of a biclausal construction.

(13) a. *Cem   Ayşe'ye   hiç kimse-yi   öp-me-si-ni   söyle-me-di
         Cem.NOM Ayşe-DAT anybody-ACC kiss-INF-POSS-ACC tell-NEG-PAST
         'Cem didn't tell Ayşe to kiss nobody'

   b. Cem   Ayşe'ye   hiç kimse-yi   öp-me-me-si-ni   söyle-di
         Cem.NOM Ayşe-DAT anybody-ACC kiss-NEG-INF-POSS-ACC tell-PAST
         'Cem told Ayşe to kiss nobody'

3.6 Summary

The results of the tests are mixed: some of the tests completely favor monoclausality whereas some others provide counterexamples for representation with a single predicate. The Passivization test clearly shows the distinction between the causative structures and the biclausal 'tell' constructions, and favors monoclausality. The Reflexive Binding test supports biclausal structure but this might be due to semantic reasons rather than syntactic. The Control test seems to give evidence for biclausality if we only consider the causative example but a comparison with the tell construction clearly demonstrates a distinction. The Adjunct Interpretation, on the other hand, favors monoclausal structures in almost all cases but there are few ambiguous interpretations not included here due to space limitations. This problem again, targets the semantic interpretation of the adjuncts rather than the clausal structure, hence does not completely negate our conclusions. Another test that clearly favors monoclausality is the use of Negative Polarity Items. The result of these observations leads us to assume a monoclausal structure.

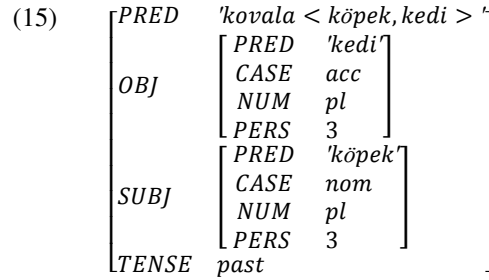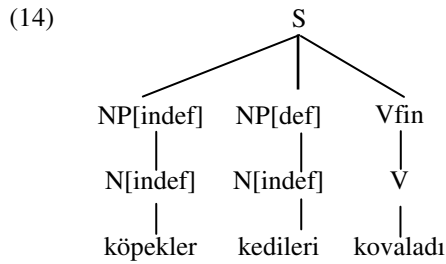## 4. Implementation in Lexical Functional Grammar

In this section, we present our analysis of causatives within the Turkish LFG grammar, which is being built as part of the ParGram Project (Butt, Niño, & Segond, 1999; Butt, King, Masuichi, & Rohrer, 2002). In this section, we first introduce the LFG formalism and then give the implementation details and f-structure representations.

4.1 Lexical Functional Grammar

LFG (Kaplan & Bresnan, 1982; Dalrymple, 2001; Bresnan, 2001) is a unification based theory representing syntax at two parallel levels: C(onstituent)-structures have the form of context-free phrase structure trees. F(unctional)-structures are sets of pairs of attributes and values; attributes may be features, such as tense and gender, or functions, such as subject and object. Values corresponding to these attributes can be symbols, semantic forms or subsidiary f-structures. C-structures define the order and grouping of constituents, and f-structures define functional roles of these constituents. Therefore c-structures are more language specific whereas f-structures of the same phrase for different languages are expected to be similar to each other.

(14) and (15) give the simplified c-structure and f-structure of sentence *köpekler kedileri kovaladı* 'dogs chased cats', respectively. The flat c-structure we posit for allows for the free word order of Turkish. The f-structure analysis encodes that the verb *kovala* 'chase' is a two place predicate where *köpek* 'dog' fills the SUBJect and *kedi* 'cat' fills the OBJect

argument of the verb. There are also additional features in the f-structure such as TENSE of the verb, or CASE of the nouns.

(14)

$$S$$

NP[indef]   NP[def]   Vfin

N[indef]   N[indef]   V

köpekler   kedileri   kovaladı

(15)

$$
\begin{bmatrix}
PRED & 'kovala < köpek, kedi > ' \\
OBJ & \begin{bmatrix} PRED & 'kedi' \\ CASE & acc \\ NUM & pl \\ PERS & 3 \end{bmatrix} \\
SUBJ & \begin{bmatrix} PRED & 'köpek' \\ CASE & nom \\ NUM & pl \\ PERS & 3 \end{bmatrix} \\
TENSE & past
\end{bmatrix}
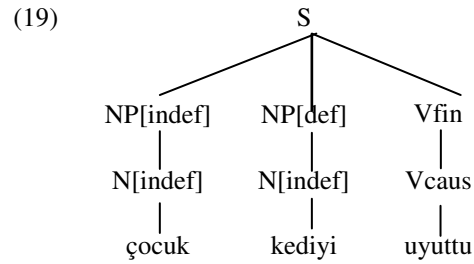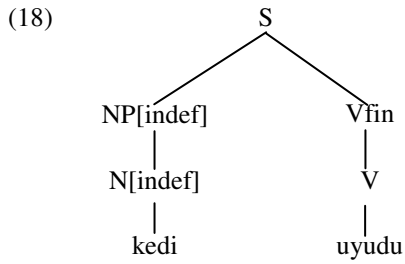$$

4.2 The representation of causative predicates

Having established that Turkish causatives are best analyzed as monoclausal, we now turn to their representation. Modeling a monoclausal structure in which two predicates (in our case the main verb and the causative morphology) merge to predicate as a single unit is tricky because the analysis involves argument structure merger. Within LFG, argument structure merger can be effected in various ways. In terms of our actual implementation, we use the Restriction Operator (Kaplan & Wedekind, 1993) and base ourselves on the approach suggested by Butt and King (2006) for Urdu causatives. As can be seen in our analysis in (21), the complex causative predication is represented as a monoclausal structure, that is, as a flat f-structure with no embeddings. The way we arrive at this analysis is complex and works as follows: For one, we assume a base f-structure as in (20), which is combined with the predicative information of the causative morpheme. That is, there are two morphemes containing the predicative information of a causativized verb: the verb stem and the causative suffix. These two predicates are merged to form the new complex predicate by substituting in the argument structure of the verb stem into one of the arguments of the causative morpheme.

As can be seen in (16b), the causative suffix has a two place predicate where the first argument is the causer and the second argument is the event that is caused. The verb stem in our case has only one argument ((16a)). When this information is substituted in for %PRED in (16b), the number of arguments of the base verb are preserved. However, the nature of arguments themselves are altered. (17) gives the semantic representations of the main verb and its causativized form, and the mapping of arguments. For intransitive verbs as in (16a), the SUBJect of the base verb becomes the OBJect of the merged structure.
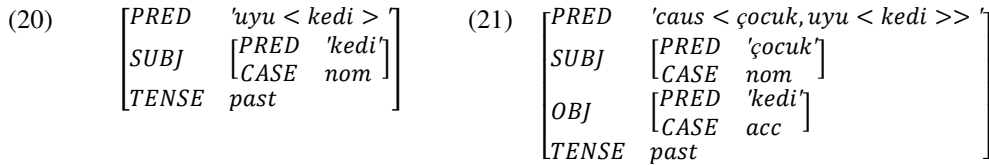
(16) a. (↑ PRED) = 'uyu⟨ (↑ SUBJ)⟩'   b. (↑ PRED) = 'caus⟨ (↑ SUBJ), %PRED2⟩'

(17) uyu⟨SUBJ⟩   caus⟨SUBJ, uyu⟨OBJ⟩⟩

C-structures corresponding to the base sentence (1a) and its causativized form (1b) are given in (18) and (19) respectively. In accordance with our analysis of basic sentences, causatives also have a flat structure in order to account for the possibility of free word order.

(18)

```
                    S
               ╱         ╲
        NP[indef]        Vfin
            │              │
        N[indef]           V
            │              │
          kedi          uyudu
```

(19)

```
                    S
            ╱       │       ╲
    NP[indef]   NP[def]     Vfin
        │          │          │
    N[indef]   N[indef]     Vcaus
        │          │          │
      çocuk      kediyi     uyuttu
```

F-structures (20) and (21) show the initial representation of the base sentence and the resulting structure after causativization. The former subject *kedi* in nominative case is the object in accusative case when causativized. The subject of the new sentence is *çocuk*.

(20)
$$\begin{bmatrix} PRED & \textit{'uyu} < kedi > \textit{'} \\ SUBJ & \begin{bmatrix} PRED & \textit{'kedi'} \\ CASE & nom \end{bmatrix} \\ TENSE & past \end{bmatrix}$$

(21)
$$\begin{bmatrix} PRED & \textit{'caus} < çocuk, uyu < kedi >> \textit{'} \\ SUBJ & \begin{bmatrix} PRED & \textit{'çocuk'} \\ CASE & nom \end{bmatrix} \\ OBJ & \begin{bmatrix} PRED & \textit{'kedi'} \\ CASE & acc \end{bmatrix} \\ TENSE & past \end{bmatrix}$$
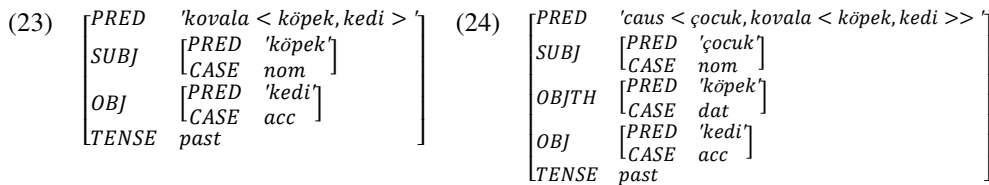
When the verb in question is transitive, the lexical entry has an subject and an object argument as exemplified for *kovala* in (22a). The merged structure in (22b) reflects the new functions assigned after the causativization process. For transitive verbs, the subject of the base verb becomes the thematic object of the merged structure; the object remains the same.

(22) a. (↑ PRED) = 'kovala⟨ (↑ SUBJ), (↑ OBJ)⟩'

b. kovala⟨ SUBJ, OBJ⟩   caus⟨ SUBJ, kovala⟨ OBJ-TH, OBJ⟩⟩
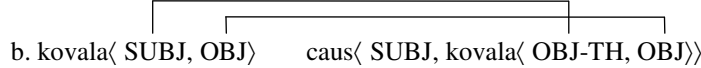
C-structures of transitive verbs have no representational difference from intransitive ones. (23) and (24) give the f-structures of transitive sentence (2a) and its causativized form (2b), respectively. *kediyi*, the object of the first sentence, preserves its case and function whereas the nominative subject *köpek* becomes a dative thematic object when the causativization occurs. The subject of the new sentence is *çocuk*.

(23)
$$\begin{bmatrix} PRED & \textit{'kovala} < köpek, kedi > \textit{'} \\ SUBJ & \begin{bmatrix} PRED & \textit{'köpek'} \\ CASE & nom \end{bmatrix} \\ OBJ & \begin{bmatrix} PRED & \textit{'kedi'} \\ CASE & acc \end{bmatrix} \\ TENSE & past \end{bmatrix}$$

(24)
$$\begin{bmatrix} PRED & \textit{'caus} < çocuk, kovala < köpek, kedi >> \textit{'} \\ SUBJ & \begin{bmatrix} PRED & \textit{'çocuk'} \\ CASE & nom \end{bmatrix} \\ OBJTH & \begin{bmatrix} PRED & \textit{'köpek'} \\ CASE & dat \end{bmatrix} \\ OBJ & \begin{bmatrix} PRED & \textit{'kedi'} \\ CASE & acc \end{bmatrix} \\ TENSE & past \end{bmatrix}$$

5. Conclusion

In this paper, we have investigated the structural representation of Turkish causative constructions and concluded that a monoclausal representation is more appropriate, although counterexamples for some tests support biclausal structures. We have used five tests in order to decide the whether the clauses are flat or embedded. For each test we have given a causative sentence and its behavior under the test conditions and compared this causative sentence with a 'tell' sentence which is known to be biclausal and summarized our observations in Section 3.6.

Based on our findings of monoclausality for Turkish causatives, we have then presented an LFG implementation involving monoclausal causative f-structures. The examples given in the paper are restricted to single causativization of intransitive and transitive verbs but the approach is applicable to transitive verbs with non-canonical objects and double causativization as well, and has already been implemented as part of the Turkish LFG grammar (Çetinoğlu & Butt, 2008).

Notes

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1   There are 3 other morphemes which are not productive and apply to a very small subset of the verbal roots. Also in the morphemes D stands for the dental consonants {d, t} and H stands for high vowels {ı, i, u, ü}.

2   Actually (13a) is grammatical when we interpret it as 'Cem did not tell Ayşe "go and kiss that person", it is Ayşe who decided to kiss'. But we think this is not what we are looking for in the tests.

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