MISSING-OBJECT CONSTRUCTIONS:
LEXICAL AND CONSTRUCTIONAL VARIATION[*]
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1   Introduction

In missing object constructions, the subject of the matrix clause is construed as coreferent with a missing complement — a "gap" — in the complement to the predicate:

   (1) a.   This book is tough to finish ___. (TOUGH-type)

        b.   This car needs washing ___. (NEED-type)

Cross-linguistically, missing object constructions are sometimes analyzed as involving long-distance dependencies, similar to the dependencies found in wh-question or relative clause constructions. Other missing object constructions have been analyzed as involving complex predicate formation. We propose that both classes of missing object constructions are found in English, exemplified by the canonical long-distance *tough* predicate and the short-distance *need* predicate. This difference in the syntactic structure of the two types of missing object constructions explains their very different syntactic behavior.

This paper is organized as follows. First we discuss *need*-type missing object constructions, arguing that they are complex predicates. We then contrast these

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with *tough*-type missing object constructions which involve a long-distance dependency. Finally, we compare the *tough* constructions to other long-distance dependencies both within English and cross-linguistically.

2 English *need* and other short-distance MOCs

The predicates in (2), which we call *need*-type predicates, involve an apparent object "gap" and have previously been analyzed as a type of *tough* predicate like the ones to be analyzed in Section 3 (Nanni 1978, 1980).[1]

(2) Sample predicates: need, could do with, want, require, warrant, deserve, merit

However, *need*-type MOCs turn out to be better analyzed as complex predicates and hence as monoclausal, with no long-distance dependency, as proposed by Barron (1999). Evidence for the complex predicate analysis includes the fact that the path in *need* constructions is always short, and parasitic gaps are not allowed. That the construction does not involve nominalization of the complement verb is shown by the fact that the complement does not have nominal characteristics and that it must be a predicate of arity greater than one. Further, the construction can be shown to contain only one subject, not two, as characteristic of a monoclausal construction. Finally, string adjacency between the *need* predicate and the complement verb is required, a common characteristic of complex predicates.

2.1 *Need*-type MOCs do not involve a long-distance dependency

Two types of evidence show that *need* predicates do not involve long-distance dependencies. First, the dependency is bounded: the SUBJ of *need* is interpreted as an argument of the complement verb, and nonlocal dependencies are not allowed:

(3) a. The clothes need/require/deserve/merit washing.

b. *The clothes need/require/deserve/merit trying to wash.

c. *The book needs/requires/deserves/merits getting her to read.

Second, parasitic gaps, which are licensed by long-distance dependencies, are not allowed:

(4) a. *This report needs filing ___without trying to read ___.

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[1] We are grateful to Paul Kay for providing this list.

    b. *This food needs cooking ___before you eat ___.

There are some acceptable examples which seem to involve parasitic gaps, as seen in (5).

(5) a.   The report needs filing ___without reading ___.

    b.   The chest needs varnishing ___after sanding down ___.

However, we believe that these examples involve a type of coordination within the *need*-type complex predicate, and do not exemplify parasitic gap formation. This analysis is consonant with the observations of Butt (1996: pp. 49 ff.), who provides evidence that coordinate verbs can be involved in complex predicate formation in Urdu. The unacceptability of more complex parasitic gap examples like (4), as well as the strictly local nature of the relation between the SUBJ of the *need* predicate and the missing argument of the complement verb, provide strong evidence against an analysis of *need* predicates as involving a long-distance dependency.

2.2 *Need*-type MOCs do not involve a nominalization

It is also clear that the complements of *need*-type complex predicates are not nominalizations.[2] First, Grover (1995) points out that *need* predicates occur with adverbs[3] and not adjectives, as seen in (6), and they disallow initial determiners, as seen in (7).

(6)   The carpet needs shaking well.

(7)   The child needs (*a) taking to the doctors.

In addition, the complement verb is required to be a predicate with at least two arguments. Even unaccusative intransitive complements are not allowed, as seen in (8):

(8) *The patient needs bleeding/yawning.

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[2]We will not discuss the alternative transitive subcategorization frame of *need* in examples like:

  (i)   I need a stiff drink.

Examples such as these involve nominal objects, but do not exemplify *need*-type complex predicates.

[3]Note that this does not rule out a gerund analysis.

It is not clear how such a requirement could be imposed on a nominalization: the requirement would be for a nominalized transitive verb and not a nominalized intransitive verb, and such requirements are generally disallowed by the Lexicalist Hypothesis. However, requirements referring to the argument structure of the complement of a light verb in a complex predicate construction are common (Butt 1996).

2.3 *Need*-type MOCs are monoclausal

In this section we show that there is no accessible subject of the complement verb.

2.3.1 Subject-oriented adverbials

If *need* predicates are complex predicates, then they are monoclausal and have only one syntactic subject. One way to verify whether *need* predicates are monoclausal is to combine the predicate with subject-oriented adverbs; in a complex predicate, a subject-oriented adverb will pick out only the matrix subject, since there is no subordinate subject. This test must be used with caution, however, since many so-called subject oriented adverbs like *deliberately* are often oriented not towards the grammatical subject but towards the logical subject, as in (9) (Quirk et al. 1985: 8.93). The same is true for adverbial phrases, like those in (10).

(9) a. Bill examined the book deliberately/willingly.

b. The book was examined deliberately/willingly.

(10) a. Bill washed the car without asking permission.

b. The book was examined without asking permission.

c. Bill killed the cockroach without stopping to think about it.

Nevertheless, the behavior of *need* predicates in combination with these adverbial phrases is telling: when these adverbial phrases are combined with *need* predicates, as in (11), they cannot refer to the subject of the complement verb, but only to the subject of the *need* predicate. That is, a sentence like (11a) has only the nonsensical reading on which the clothes must ask permission:

(11) a. *The car needs washing without asking permission.

b. *Cockroaches need killing/The car needs washing without stopping to think about it.

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This is because the adverbials cannot refer to the logical subject of the complex predicate, since it is suppressed. Thus, subject oriented adverbials support the idea that *need* predicates have a single syntactic subject, with the subject of the complement verb suppressed.

2.3.2 For-phrase

An interesting argument for complex predicatehood comes from the fact that MOCs do not permit a *for*-phrase to act as the overt controller of the subject of the complement verb, as seen in (12).[4]

   (12) a. *The car needs/requires/deserves for him washing.

          b. *For him, the car needs/requires/deserves washing.

For-phrases are licensed with the biclausal missing object constructions but not with the monoclausal complex predicates, since there is no complement involved in this complex predicate construction.[5]

2.4   Phrase structure characteristics

Besides demonstrating the impossibility of *for*-phrases with *need* predicates, the examples in (12) provide evidence for a string adjacency requirement: *need* predicates must appear adjacent to their complement verb. This requirement is also shown by the ungrammaticality of examples like (13):[6]

   (13) *The car needs thoroughly washing.

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[4]Grover (1995: Chapter 4) claims that *worth* belongs to the class of *need* predicates and yet allows a *for*-phrase. However, in Section 3 we analyze *worth* as a long-distance *tough* predicate, which does not involve complex predicate formation.

[5]Given the passive-like meaning of the *need* complex predicate, we might expect *by*-phrases as a plausible alternative expression of the subject of the complement verb; see Barron (1999) for discussion of the passive origin of the *-ing* participle in this construction. Some examples with *by*-phrases are in fact acceptable (thanks to Joan Bresnan for pointing this out):

    (i)   This coat needs washing by me.

However, even with an overt agent, subject-oriented adverbials are not possible:

    (ii) a. *This coat needs washing by me without asking permission.

          b. *These cockroaches need killing by exterminators without stopping to think about it.

[6]The one item which can marginally intervene is contrastive negation, as in (i). Butt (1996) cites similar intervention of negation in Urdu complex predicates.
  (i) The car needs not WASHING, but POLISHING.

Though some complex predicate constructions do not require string adjacency (Butt 1996), such a requirement is commonly found in complex predicate constructions.

2.5 Syntax of *need*-type MOCs

The basic functional structure of a *need* predicate is shown in (14), as previously proposed by Barron (1999):

(14) The clothes need washing.

$$\begin{bmatrix} \text{PRED} & \text{'NEED-WASHING} \langle \text{SUBJ} \rangle \text{'} \\ \text{SUBJ} & \begin{bmatrix} \text{PRED} & \text{'CLOTHES'} \end{bmatrix} \end{bmatrix}$$

The complement of the light verb *need* must take (at least) two arguments: the argument higher on the hierarchy is suppressed, and the second argument surfaces as the SUBJ of the *need* predicate. At argument structure, the complement verb cannot be monovalent. However, the complex predicate can inherit additional arguments from the complement verb:

(15) Chris needs convincing ___that this is a good idea.

3 English *tough* and other long-distance MOCs

Long-distance missing object constructions in English can be roughly divided into the following categories:

(16) a. Adjective + infinitival complement: tough, easy, hard, difficult, simple, impossible, etc.

b. Adjective + participial complement: worth, worthwhile

c. Modified adjective: too + ADJ, ADJ + enough

d. Time phrases: take 3 years, take 1 month, etc.

In this section, we argue that *tough* predicates involve long-distance dependencies with anaphoric control of the complement object by the matrix subject.

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3.1 *Tough*-type MOCs involve a long-distance dependency

Tough-type missing object constructions have often been analyzed in terms of a long-distance dependency similar to the long-distance dependencies in interrogative and relative clause formation. This proposal has been adapted in work by, among others, Kaplan and Bresnan (1982), Gazdar et al. (1985), and Pollard and Sag (1994), with a dissenting view presented by Grover (1995). Arguments for this type of analysis are that *tough* predicates can license parasitic gaps and obey island constraints. After reviewing the relevant data and past analyses, we also propose a version of the long-distance dependency analysis for the *tough* construction.

3.1.1 Unbounded dependencies

The dependency path in a *tough* construction can be arbitrarily long. That is, not only can objects of the predicate's complement be gapped, but complements of the complement can have gapped objects. (17) shows the shortest paths, using examples from different subtypes of *tough* predicates, and (18) shows longer paths for the same types of predicates. Additional long-distance paths are given in (19), taken from Hukari and Levine (1987).

(17) a. This book is easy to read.

     b. This book is too valuable to throw away.

     c. This book is worth reading.

     d. This book takes six months to read.

(18) a. This book is hard to get her to avoid reading.

     b. This house is too old to get anyone to try to renovate.

     c. This book is worth trying to get her to read.

     d. This book takes six months to try to read.

(19) a. Kim would be difficult to persuade Robin to attempt to reason with.

     b. Robin is too nice for us to try to persuade Kim to tease.

Consider example (19a), where *Kim* is coreferent with the gapped object of *reason with*, passing through the domains of three other predicates (*difficult, persuade, attempt*). Such long paths are the mark of an unbounded dependency: the subject-gap relation can span arbitrarily many predicates.

3.1.2 Island phenomena

Hukari and Levine (1987) claim that the long-distance path in *tough* constructions obeys island constraints (see also Cinque 1990; Grover 1995). This fact has been cited as evidence for analyzing *tough* constructions similarly to other long-distance dependencies. For example, as Hukari and Levine (1987) show, the gap cannot appear in an NP-island, as seen in (20b) for a simple NP and in (20c) for a relative clause within an NP. As seen in (20d), they also obey wh-islands.

(20) a. Kim would be difficult to imagine kissing.

b. *Kim would be difficult to imagine [the likelihood of kissing]$_{NP}$.

c. *Kim would be difficult to imagine a person [who likes]$_{REL-CL}$.

d. *Kim would be difficult to wonder [whether to kiss]$_{WH}$.

In Section 4, we show that there are various differences between other long-distance dependencies and long-distance missing object constructions. Nevertheless, all long-distance dependencies seem to obey island constraints.

3.1.3 Parasitic gaps

An additional similarity between long-distance dependencies in interrogative and relative clause formation and in *tough* constructions comes from *tough*'s ability to license parasitic gaps (Montalbetti et al. 1982; Grover 1995). In (21), from Grover (1995), the subject *these papers* is coreferent not only with the object of *file*, but also with the object of *reading*. Further examples are shown in (22) for a variety of *tough* predicates.

(21) These papers are easy to file ___without reading___.

(22) a. This book is hard to throw away without trying to read.

b. This book is too interesting to read without really trying to understand.

c. This book is not worth reading without attempting to analyze deeply.

d. This book would take three years to read without even trying to analyze.

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3.2 *Tough*-type MOCS are biclausal

Unlike *need*-type complex predicates, *tough* constructions are biclausal. As such, a *for*-phrase is possible, as in (23) (see Levine 2000 on the status of the *for*-phrase):
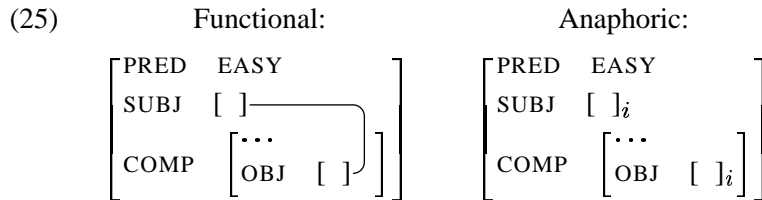
(23) a. The clothes are easy for George to wash.

  b. The clothes are too dirty for me to wear.

In addition, subject oriented adverbials can refer to the understood subject of the lower predicate, as seen in (24). This was not possible with the *need*-type complex predicates.

(24) a. The clothes are too clean to wash without asking permission.

  b. Cockroaches are easy to kill without stopping to think about it.

3.3 Connectivity: Functional vs. anaphoric control

We have shown that the *tough* construction involves a long-distance dependency between the matrix subject and the gapped object of a potentially long-distance complement of the *tough* predicate. The question then arises as to whether this dependency involves functional control, in which the subject and gapped object are identical, or anaphoric control, in which they are co-referent but syntactically distinct. This question is sometimes referred to as "connectivity".

(25) Functional: Anaphoric:

$$
\begin{bmatrix}
\text{PRED} & \text{EASY} \\
\text{SUBJ} & [\ ] \\
\text{COMP} & \begin{bmatrix} \cdots \\ \text{OBJ} & [\ ] \end{bmatrix}
\end{bmatrix}
\qquad
\begin{bmatrix}
\text{PRED} & \text{EASY} \\
\text{SUBJ} & [\ ]_i \\
\text{COMP} & \begin{bmatrix} \cdots \\ \text{OBJ} & [\ ]_i \end{bmatrix}
\end{bmatrix}
$$

This issue has been addressed by Kaplan and Bresnan (1982), Hukari and Levine (1987), Bayer (1990), Grover (1995), and Calcagno (1999), among others. Within LFG, Kaplan and Bresnan (1982), Saiki (1991), and Yamamoto (1996) analyze *tough* constructions as involving functional control of a topic.

  However, evidence from casemarking indicates that anaphoric control, and not functional control, is involved. In particular, there is a case mismatch between the nominative case subject and the accusative case object (Hukari and Levine 1987, 1991; Bayer 1990; Calcagno 1999). This is seen in (26).

(26) He/*Him is tough to kill ___.

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It is easy to handle this case discrepancy if these constructions are analyzed as involving anaphoric control, with an anaphoric relation between the matrix subject and the gapped argument in the subordinate clause. In an anaphoric control construction, there are two different f-structures involved, one which is nominatively case marked and one which is accusatively marked. In contrast, functional control constructions involve identity between the controller and the controllee, and thus require case preservation.

Some arguments that have previously been made for and against connectivity (i.e., functional vs. anaphoric control) are flawed in that they are actually orthogonal to the issue, at least within LFG. Calcagno (1999), citing Pollard and Sag (1994), considers phrase structure category mismatches such as that in (27), arguing that there is no syntactic connectivity between the matrix argument and the lower clause.

(27) a. [For Robin to be a spy] would be hard to get over ___.

       b. *It would be hard to get over [for Robin to be a spy].

However, this is not an argument for or against f-structure connectivity in LFG, since LFG defines subcategorization in functional terms, not in terms of phrase structure configuration. Indeed, such category mismatches are common in a variety of constructions, as shown by Kaplan and Bresnan (1982) and Kaplan and Zaenen (1989) in their discussion of topicalization of sentential complements:

(28) a. That Chris yawned he wasn't aware of. (= *of* + *that*)

       b. *That Chris yawned he wasn't aware. (= no *of* + *that*)

       c. *He wasn't aware of that Chris yawned. (= *of* + *that*)

       d. He wasn't aware that Chris yawned. (= no *of* + *that*)

Hukari and Levine (1991) present several arguments for connectivity. First, they show that verbs which require subjunctive complements also impose this requirement when these complements occur in *tough* constructions, as in (29).

(29) a. It would have been difficult for Robin to demand of us that we be/*were there on time.

       b. That we be/*were there on time would have been difficult for Robin to demand of us.

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However, Jacobson (1992) shows that this is a semantic requirement, not a syntactic one, since it holds even across sentences:

(30)   I demanded something. It was that we be/*were there on time.

Second, Hukari and Levine (1991) claim that phrase structure category restrictions must be met both in *tough* constructions and their non-*tough* counterparts (judgements are those of Hukari and Levine (1991)):
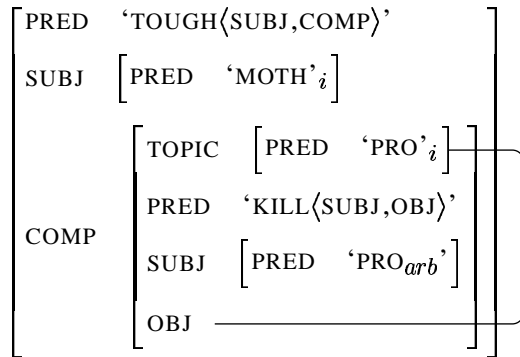
(31)   a.   I pretended that I was sick.

     b.   ?? I pretended my sickness.

     c.   [That I was sick] would have been difficult for me to pretend when I really wasn't.

     d.   ?? My sickness would have been difficult for me to pretend.

However, we believe that the contrast between (31a) and (31b) is better explained in terms of grammatical function rather than phrase structure category; the verb *pretend* requires a sentential complement with grammatical function COMP, and noun phrases are not associated with the COMP role. Our judgements differ from those of Hukari and Levine (1991) on the status of (31c): we do not believe this sentence is fully grammatical, since (as example (31b) shows) *pretend* does not take an object and thus cannot participate in the *tough* construction.

3.4   Syntax of *tough*-type MOCs

The structure given in (32) for the sentence *tough to kill* captures the facts described earlier in this section. The *tough* predicate subcategorizes for a thematic subject and a COMP. The subject anaphorically controls the TOPIC of the COMP, as indicated by the coindexation, and the TOPIC fills an OBJ role within the subordinate clause via functional control. Note that the arbitrary control of the PRO SUBJ means that this construction must involve a COMP and not an XCOMP complement.

(32)   Moths are tough to kill.

$$
\begin{bmatrix}
\text{PRED} & \text{`TOUGH}\langle\text{SUBJ,COMP}\rangle\text{'} \\
\text{SUBJ} & \begin{bmatrix} \text{PRED} & \text{`MOTH'}_i \end{bmatrix} \\
\text{COMP} & \begin{bmatrix}
\text{TOPIC} & \begin{bmatrix} \text{PRED} & \text{`PRO'}_i \end{bmatrix} \\
\text{PRED} & \text{`KILL}\langle\text{SUBJ,OBJ}\rangle\text{'} \\
\text{SUBJ} & \begin{bmatrix} \text{PRED} & \text{`PRO}_{arb}\text{'} \end{bmatrix} \\
\text{OBJ} & \text{———}
\end{bmatrix}
\end{bmatrix}
$$

3.5 Argument structure of *tough*-type MOCs

A closer look at the argument structure and semantic requirements of *tough* predicates explains some otherwise mysterious constraints. In particular, we adopt the proposal that the subject of the *tough* predicate is thematic. In addition, we discuss some semantic constraints on the complement of *tough* predicates.

3.5.1 Subject of *tough* is thematic

There has been extensive controversy over whether or not the subject in *tough* constructions is a thematic argument of the *tough* predicate. The primary reason that the subject of *tough* has been considered to be nonthematic is that many *tough* predicates also participate in a construction in which the subject is an expletive, as in (33).[7]

(33) a. This book is hard to read.

  b. It is hard to read this book.

In some transformational theories the gapped object is assumed to move from its original (thematic) object position to the matrix subject position; a violation ensues if both positions are assigned thematic roles, as discussed by Chomsky (1981). The analysis we present does not rely on movement transformations, and so this is not a problem for LFG.

  We claim that the subject is in fact a thematic argument of the *tough* predicate, following Lasnik and Fiengo (1989), Jacobson (1992), Pollard and Sag (1994), Kim (1995), and Clark (2000). Note that if the subject of *tough* were nonthematic,

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[7]However, not all *tough* predicates do this:
(i)   This book is too long to read.
(ii) *It is too long to read this book.

as is sometimes argued, *tough* predicates would be like raising verbs and would necessarily involve functional control. However, there is substantial evidence that the subject of *tough* is thematic, consistent with the anaphoric control analysis that we assume.

First, it is impossible for an expletive pronoun to appear as the subject of a *tough* predicate, even if it leaves an object gap, as in (34).

(34) a. *There is hard for me to imagine ___ ever being enough snow in New England. (Jacobson 1992)

b. *There would be tough to believe ___ to be a party in our back yard tonight. (Bayer 1990; Jacobson 1990)

On our view, the semantically empty matrix subject would be required to enter into an anaphoric relation with the subordinate clause TOPIC/OBJ, a relation which is not semantically possible. Comrie and Matthews (1990) provide an additional explanation for the ungrammaticality of these examples based on discourse functions: they are ungrammatical because the *tough* construction serves to topicalize the subject, and dummy arguments cannot be topics.

Postal (1974) cites the examples in (35) and discusses the difference in meaning, a difference which is unexpected if the subject of *tough* predicates is non-thematic.

(35) a. Nothing is hard for Melvin to lift. (only wide scope)

b. It is hard for Melvin to lift nothing. (narrow scope)

Jones (1983) notes a similar difference in interpretation related to the possibility for a non-specific interpretation of *someone* in *tough* constructions, as in (36).

(36) a. It is easy to fool someone.

b. ?? Someone is easy to fool.

Finally, consider evidence from idioms. Past reasoning on this issue has been as follows (Berman 1973; Bayer 1990; Jacobson 1990). Idioms are allowed with subject raising verbs, whose subject is nonthematic, but not with equi verbs. Idioms are also acceptable with *tough* predicates. Therefore, the subject of *tough* predicates must be non-thematic. Examples are shown in (37).

(37) a. Tabs seem to have been kept on my brother. (raising)

b. *Tabs are eager to be kept on my brother. (equi)

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    c.   Tabs are difficult to keep on my brother. (tough)

However, in a detailed study of idiomatic expressions, Nunberg et al. (1994) show that the examples in (37) involve what they call "idiomatically combining expressions", not true idioms. Many idiomatically combining expressions are acceptable with equi as well as *tough* predicates, depending on the meanings of the parts of the expression:

(38)   An old dog never wants to be taught new tricks. (equi)

(39) a.   Some strings are harder to pull than others. (tough)

      b.   The law can be hard to lay down. (tough)

As Nunberg et al. show, true idioms are not possible with *tough* predicates because, like equi verbs, they are semantically incompatible with a thematic subject position:

(40) *The bucket is easy to kick in wartime. (tough)

This evidence indicates that the subject of *tough* predicates in missing object constructions is thematic; as Bayer (1990) notes, this necessitates positing two different argument structure frames for some *tough* predicates.

3.5.2   Semantic constraints on the complement of *tough*

In addition to constraints on their subject, *tough* predicates also impose semantic constraints on their complement, originally explored by Nanni (1978) (see also Lasnik and Fiengo 1989; Clark 2000): the complement of a *tough* predicate is required to be volitional or intentional with respect to its subject. Examples from Berman (1973) and Nanni (1978) in (41) support this view:

(41) a. *The park was tough for there to be men sitting in.

      b. *The money was tough for John to lack.

      c. *That expensive dress was easy for Mary to want.

      d. *The hardcover edition was hard for the teacher to prefer.

      e. The man was hard for Mary to find attractive/*sick.

      f. The children were difficult for us to return unharmed/*exhausted.

Nanni (1978) shows that stativity is not the relevant factor in determining the felicity of the examples in (41). That is, although most of the ungrammatical complements in (41) involve stative predicates, grammatical examples of *tough* predicate complements with stative predicates are also found:

(42) a. The lecture is hard for me to understand.

b. Your cousin is difficult for me to like.

c. Her transgressions are easy for us to forgive.

This restriction to intentionality solves a long-standing puzzle in the ungrammaticality of examples in which the object of a raising verb is the subject of a *tough* predicate. The example in (43a) is originally due to Chomsky (1973), discussed in Postal (1974); another example from Berman (1973) is seen in (43b) (see also Zwicky 1987).

(43) a. Smith was easy for Jones to force ___ to recover. (equi)

b. *Smith was easy for Jones to expect ___ to recover. (raising)

c. *John is impossible to expect ___ to understand that book. (raising)

The explanation for the ungrammaticality of the examples in (43) is that raising verbs are generally not volitional with respect to their subjects. In fact, it is possible for the *tough* construction to involve a raising verb of the appropriate semantic type; Nanni (1978) provides example (44), attributed to Partee.

(44) This analysis was hard for us to prove ___ to be correct. (raising)

In sum, we conclude that *tough* predicates are semantically two-place predicates in the missing-object *tough* construction. The subject of *tough* predicates is a thematic argument of that predicate, as was shown in the f-structure in (32); there are also semantic restrictions on the complement of the *tough* predicate in that it must be intentional with respect to the subject.

4 *Tough* and other long-distance dependencies

We have shown that there are two types of missing object constructions in English: *need*-type predicates are complex predicates, while *tough* predicates involve long-distance dependencies. In this section, we examine constraints on the long-distance dependency in *tough* predicates, concentrating primarily on the canonical examples involving an adjective like *tough* with an infinitival complement. Our basic question is: What paths are possible in long-distance dependency constructions in English and cross-linguistically?

4.1 Constraints on *tough*-type dependencies

Besides the nominal island constraints mentioned in Section 3, *tough* constructions obey constraints forbidding adjunct gaps, subject gaps, and extraction from tensed clauses.

First, it is impossible to extract an ADJUNCT with a *tough* predicate, even if it is an NP, as in (45) (Bayer 1990).

(45) *Tuesday would be difficult to take the exam.

However, it is possible to extract the OBJ of an ADJUNCT, as in (46) (Grover 1995: Chapter 5). The long-distance path in a *tough* construction cannot end in an ADJUNCT; it must end in an OBJ.

(46)   a.   This violin is easy to play the sonata on.

       b.   Kim is difficult to sit next to.

Second, subject gaps are not allowed, as in (47) (Hukari and Levine 1987; Gazdar et al. 1985). Once again, the path must end in OBJ, not a SUBJ.

(47) *Mary is hard for me to believe ___ kissed John.

Third, extraction from tensed clauses is forbidden or at best marginal (Postal 1971; Bresnan 1971; Nanni 1978; Hukari and Levine 1987), although Kaplan and Bresnan (1982) and Calcagno (1999) present similar examples which they claim are grammatical. This is shown in (48).[8]

(48)   %Mary is hard for me to believe Leslie kissed.

A puzzle remains with regard to the *tough* path: Double object constructions are questionable in the *tough* construction, no matter which object participates in the construction. We do not examine this problem further here.

(49)   a. *Kim would be easy to make a cake.

       b. *A cake would be easy to make Kim.

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[8]Kaplan and Bresnan classify (i) as grammatical and Calcagno (1999) presents (ii) as grammatical.

(i)   Mary is tough for me to believe that John would ever marry ___.
(ii)   That kind of mistake is hard to realize you're making ___.

Here we outline the precise nature of the path for *tough* predicates. The first grammatical function in the body of the path is always COMP, since this is the grammatical function of the complement of the *tough* predicate. The bottom of the path is always OBJ.[9] This leaves us with determining the rest of the body of the path. Based on the paths found in the examples in the papers cited and then extrapolating for the unbounded dependency, we get the hypothesized path in (50):

(50) $(\uparrow$ COMP TOPIC$) = (\uparrow$ COMP XCOMP* $(\{$OBL$_\theta|$ADJ$\})$ OBJ$)$

In (50), the body of the functional uncertainty is COMP XCOMP* $(\{$OBL$_\theta|$ADJ$\})$, while the bottom is OBJ. We require an additional constraint on the body of the path, that it cannot contain a tensed element. In English, this falls out from the definition of XCOMP, since English XCOMPs are always non-finite. This proposal is similar to the proposal of Yamamoto (1996), but differs in several respects. Yamamoto (1996) assumes that the relation between the SUBJ of the *tough* predicate and the complement OBJ is one of functional control, not anaphoric control of a topic as we assume. Also, Yamamoto's proposal does not account for OBJ gaps inside adjunct or oblique phrases, which we have shown to be possible.

As mentioned above, some speakers allow a more unconstrained path; for example, Kaplan and Bresnan (1982) classify (51) as grammatical, where the path passes through the finite complement of *believe*:

(51)   %Mary is tough for me to believe that John would ever marry ___.

This kind of variation is expected, since the long-distance path may vary within universally set parameters.

4.2   Variations in long-distance dependencies

Although long-distance dependencies are involved in both question and relative clause formation and in the *tough* construction, they do not involve the same path (Grover 1995; Hukari and Levine 1987, 1991). This can be easily seen by comparing the range of possible wh-questions with possible *tough* constructions. Question formation involves a much greater range of possibilities for the long-distance path. The basic English long-distance dependency path from Kaplan and Zaenen (1989) is seen in (52).

(52) $(\uparrow$ TOPIC$) = (\uparrow \{$COMP, XCOMP$\}$* $($GF$-$COMP$))$

[9]Pollard and Sag (1994) capture these constraints by requiring the gapped constituent to be an accusative NP. That is, their generalization involves case and not grammatical function.

First, consider the bottom of the functional uncertainty. As seen in section 4, only OBJ is allowed as the bottom for the *tough* construction, SUBJ and other grammatical relations are impossible. However, question formation allows a large range of grammatical functions as bottom, including SUBJ, as in (53a), and ADJUNCT, as in (53b).

(53) a. Who do you think saw Bill? (SUBJ)

b. When do you need to leave? (ADJUNCT)

Next, consider the body of the functional uncertainty involved in the two constructions. This is also different and, once again, more possibilities are available for question formation. As discussed earlier, the gap in the *tough* construction cannot appear in a finite clause. In contrast, question formation can involve certain finite clauses, as in (54).

(54) a. Which question did Bill think we asked the teacher?

b. Who did you say that Mary saw?

This variability in long-distance dependencies can also be seen cross-linguistically. For example, the long-distance path for question formation and topicalization in Icelandic is much less restricted than that in English, as seen in (55a) (Kaplan and Zaenen 1989) in which the bottom of the path can be any grammatical function and the body can be any grammatical function except ADJUNCT. In contrast, the path in Tagalog is much more restricted, as seen in (56) (Kroeger 1993), in which only SUBJ or SUBJ of SUBJ, etc. can occur.

(55) a. Icelandic: ($\uparrow$ TOPIC) = ($\uparrow$ (GF-ADJ)* GF)

b. Tagalog: ($\uparrow$ TOPIC) = ($\uparrow$ SUBJ$^+$)

5 Conclusion

We have shown the existence of two types of MOC in English. *Need*-type MOCs are complex predicates, and *tough*-type MOCs are long-distance dependencies. Cross-linguistically, complex predicate formation in missing object constructions is quite common. In particular, Huang (1997) shows in detail that missing object constructions in Chinese and Japanese are complex predicates. Huang (1997) provides four pieces of evidence that Chinese lexical *tough* constructions involve complex predicate formation: the constructions respect lexical integrity, they behave like a disyllabic verb in question formation, they are demonstrably intransitive

and stative, and they show idiosyncratic gaps and suppletive semantic shifts. Huang also goes on to demonstrate that the Japanese *tough* construction involves complex predicate formation.

Missing object constructions in other languages have often been noted to allow only short-distance paths: Grover (1995) discusses missing object constructions in Dutch, Italian, and Spanish, noting that in all of these languages the relation between the subject of the *tough* predicate and the argument of the complement verb is very strictly bounded, suggestive of complex predicate formation. Further investigation may reveal the prevalence of *need*-type "missing object constructions" involving complex predicate formation.

In contrast, *tough* predicates involve anaphoric control between the subject of the *tough* predicate and the TOPIC of the *tough* complement. The relation between the TOPIC and the "missing object" is a long-distance dependency, though the properties of this dependency differ from the dependency in question formation. Thus, long-distance dependencies can vary within a language and cross-linguistically; this work constitutes a first step toward a universal typology of long-distance dependencies both within and across languages.

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