Control Over Objects: an Experimental Investigation of Transitive Subject Control

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Abstract

This thesis explores transitive subject control (TSC) phenomena using experimental syntax methodologies. Theoretical accounts of TSC are problematic. Syntactic theories either disregard TSC or find it ungrammatical (Chomsky 1980, Larson 1991, Hornstein 1999 and Manzini and Roussou 2000) while semantic theories cannot explain the structure's rarity or reduced acceptability (Postal 1970, Jackendoff 1972, Ruzicka 1983, Chierchia 1984, and Farkas 1988). Additionally, work on corpora (Egan 2006; Jeffrey 2012) suggests that TSC is rare. A series of interconnected experiments explores these issues. Experiment one uses audio stimuli and an acceptability judgment task to assess the acceptability of TSC. Experiment two employs a self-paced reading task to test for processing difficulties associated with TSC. Experiment three uses an acceptability judgment task to test the effect of both syntactic and semantic violations. The results of these experiments suggest that TSC is of reduced acceptability and is associated with processing delays. It is argued that both syntactic and semantic strategies of interpreting TSC are available simultaneously and that the conflict between these derives the reduced acceptability observed.

Keywords: Control; Subject Control; Control Shift; Syntax; Experimental Syntax; Semantics

To Usamah

My longest and best friend.

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List of Acronyms

MDP	Minimal Distance Principle
MLC	Minimal Link Condition
TSC	Transitive Subject Control

Chapter 1. Introduction

This thesis explores transitive subject control (TSC) phenomena using experimental syntax methodologies. Despite much attention in the literature, theoretical accounts of transitive subject control remain problematic. Syntactic theories either dismiss the importance of TSC or find it ungrammatical (Chomsky 1980, Larson 1991, Hornstein 1999 and Manzini and Roussou 2000). Semantic theories, on the other hand, cannot explain the structure's rarity or reduced acceptability (Postal 1970, Jackendoff 1972, Ruzicka 1983, Chierchia 1984, and Farkas 1988). Additionally, work on corpora (Egan 2006; Jeffrey 2012) suggests that TSC is rare in spoken English. I explore these issues through a series of interconnected experiments. Experiment one uses an acceptability judgment task with audio stimuli to assess the acceptability of TSC. Experiment two employs a self-paced reading task to test for processing difficulties associated with TSC. And lastly, experiment three uses an acceptability judgment task with text stimuli to test the effect of both syntactic and semantic violations. The results of these experiments suggest that TSC is of reduced acceptability and is associated with processing delays. It is argued that both syntactic and semantic strategies of interpreting TSC are available simultaneously and that the conflict between these derives the reduced acceptability observed. An exploration of the results of experiments one and three in the discussion section suggests that there is variation in the use of syntactic and semantic strategies both between speakers as well as within the acceptability rating assigned by individual participants.

Rosenbaum (1967) first observed the possibility of subject control across objects with the verb *promise*. Transitive subject control structures such as these require a subject control verb to take both a direct object and a non-finite clause as complements. Only a few English verbs exhibit transitive subject control. Examples of such verbs include *promise* as seen in (1), *threaten* as seen in (2) and *ask* and *beg* under conditions of control shift as seen in (3) (Landau 2013; Landau 2000).

1)	Jane	promised	Sarah	to do the dishes
	subject	main verb	direct object	non-finite complement clause
2)	Chris	threatened	Steve	to kill himself
	subject	main verb	direct object	non-finite complement clause
3)	The student	begged	the teacher	to go outside
	subject	main verb	direct object	non-finite complement clause

The type of structure exhibited in (1) through (3) has been difficult to accommodate within the theory of control. Attempts to describe transitive subject control fall generally in to two categories. One consists of those that base explanation of this phenomenon primarily in syntax or structural approaches (Chomsky 1980, 1-46; Larson 1991, 103-139; 63-113; Manzini and Roussou 2000, 409-447; Hornstein 1999, 69-96). This set of theoretical approaches is characterized by an understanding of control based on locality. Although these theories differ widely in terms of how locality is understood, each of them contends that the proximity of the controller to the controlled element determines control relations. An alternative group of theories describes control phenomena primarily in terms of semantics (Postal 1970, 439; Jackendoff 1972; Ruzicka 1983, 309; Chierchia 1984; Farkas 1988, 27-58). Proponents of these approaches argue that syntactic mechanisms are insufficient to capture the full breadth of control

behaviour. And, in spite of disagreement in terms of the precise strategies used to describe control, this set of approaches agrees that some element(s) of semantics must be employed to do so.

Despite the attention transitive subject control has received in the literature, only a limited amount of research has been conducted into the use of this structure. Data from corpus analysis suggests that transitive subject control *promise* occurs at low rates in contemporary spoken English (Egan 2006; Jeffrey 2012). The lack of available data on transitive subject control, coupled with theoretical importance of this structure, motivates the use of experimental methods to deepen understanding of it. These methods are particularly useful for investigating the acceptability of transitive subject control and for exploring potential difficulties in processing that may be associated with it. The primary aim of this thesis is to better inform theoretical understandings of transitive subject control through experimental investigation of this phenomenon.

1.1. Theoretical Approaches

This section discusses the two primary theoretical explanations of control. It provides separate treatments of the structural and semantic approaches to control phenomena as they have been put forth in the literature. The present discussion is limited to issues of controller choice in cases of obligatory control. Related issues concerning the nature and existence of PRO are left out of the discussion, as are cases of non-obligatory control. Thus, the discussion here is primarily focused on cases of object-control, intransitive subject-control and transitive subject-control such as those illustrated in (4) through (6).

4) Billie forced Ella to return the key *Object Control*

5) Donald attempted to bake a cake *Intransitive Subject Control*

6) James promised Joel to leave *Transitive Subject Control*

In accordance with the aims of this study, particular attention is given to the case of transitive subject-control and where possible discussion of theory internal detail of particular proposals is avoided.

1.1.1. Structural Approaches

Structural approaches to control begin from the premise that the choice of the controller is related to locality. This line of research began with Rosenbaum (1967) and his proposal of the Minimal Distance Principle. Subsequent theorists such as Larson (1991), Hornstein (1999) and Manzini and Roussou (2000) have attempted to maintain his basic insights. In what follows I will discuss each of the approaches in turn and explain why their treatment of transitive subject-control remains problematic.

Rosenbaum (1967) outlines a set of primary observations about the behaviour of control structures. This includes the proposal that control is explained by the Minimal Distance Principle (MDP) as stated below.

Minimal Distance Principle (Rosenbaum 1970)

An infinitive complement of a predicate P selects as its controller the minimal c-commanding noun phrase within the clause containing it.

As seen below in (7), the MDP accurately accounts for cases of object control. In this sentence, the direct object of the matrix clause, Natalie, is co-referenced with the subject of the non-finite complement clause. Given that Natalie is the closest NP that c-commands the non-finite complement clause this is as predicted by the MDP.

7) Holly forced Natalie$_i$ PRO$_i$ to leave

The behaviour of intransitive subject-control verbs is also accurately accounted for, as seen in (8), where the subject of the matrix clause, Holly, is also the closest NP that c-commands the non-finite complement clause.

8) Holly$_i$ wanted PRO$_i$ to leave

However, the MDP is not capable of accounting for the behaviour of transitive subject-control verbs. As seen in (9), the subject of the non-finite complement clause is co-referenced with the subject of the matrix clause, Holly, yet the closest NP that c-commands it is the object of the matrix clause, Natalie.

9) Holly$_i$ promised Natalie PRO$_i$ to leave

To summarize, the MDP can account for object control and intransitive subject control but cannot account for transitive subject control. As will be seen, the basic elements of Rosenbaum's proposal would become foundational to many other theorists' work on control.

Larson (1991) attempts to defend the MDP against the apparent exception that transitive subject-control poses. Here, Larson argues that transitive subject control structures are, underlyingly, double object structures. Beyond the assumption that the MDP is responsible for determining controller choice, his argument rests on two main points: a) that ditransitive *promise* and transitive subject control *promise* are syntactically similar and b) that controller choice is determined at deep structure. As will be described below, these assumptions allow Larson to demonstrate that the similarity between transitive subject control and object control structures at surface structure does not hold

at deep structure and argue that transitive subject control structures do conform to the MDP.

The motivation for analyzing transitive subject control *promise* as a double object construction is made on the basis of apparent parallelisms between these structures and ditransitives such as *give* as seen in (10) through (13).

10) John gave Mary a book

11) John promised Mary a book

12) John gave a book to Mary

13) John promised a book to Mary

In (10) through (13) it is clear that both *promise* and *give* can take a direct object and an indirect object or a direct object and an oblique prepositional phrase. Note, however, that, as seen in (14) and (15) object control verbs do not occur in such structures.

14) *John forced Mary a conclusion

15) *John forced a conclusion to Mary

For Larson, the dissimilarity of object control structures and transitive subject control structures on the one hand, and the similarity of transitive subject control structures and ditransitive structure on the other, is significant. He claims that this contrast points to fundamental differences in how control is assigned by either type of control verb. In his analysis, at deep-structure, ditransitive verbs have the structure exemplified in the left panel of Figure 1.

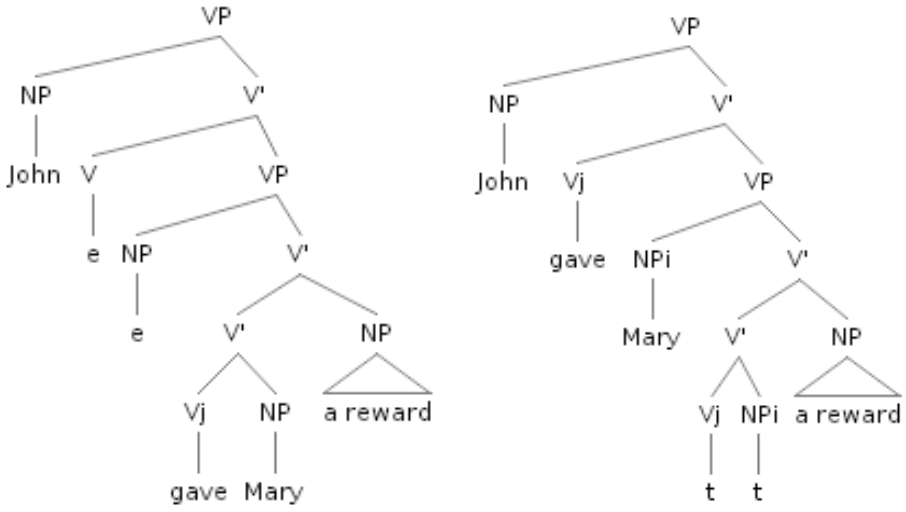

Figure 1. Deep (left) and Surface (right) structure for ditransitive verbs

Larson suggests that ditransitive verbs undergo a movement operation such that the lower verb is raised to the higher V position and the complement of the verb is raised to the specifier position of the lower verb as in the right panel of Figure 1. Larson argues that the same movement applies to transitive subject control verbs. Thus, the deep-structure of such verbs would be as exemplified in the left panel of Figure 2 and the surface-structure would be as represented in the right panel of the same figure, after the verb has been raised and the complement for the lower verb has moved to the specifier position.

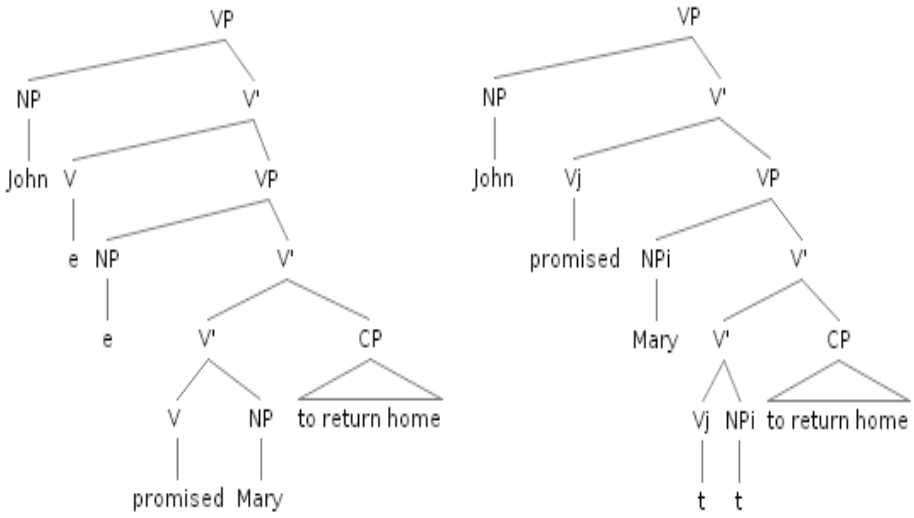

Figure 2. Deep (left) and Surface (right) structure for transitive subject-control verbs

Notice that the c-command relationships between the direct object of the matrix clause and the non-finite complement clause are different in the two structures. In deep-structure, the subject of the matrix clause is the nearest NP that c-commands the complement clause. In surface-structure, this relationship is reversed and the direct object c-commands the complement clause. Since Larson contends that choice of the controller is established at deep-structure, this point is crucial as it allows transitive subject-control to be accounted for by the MDP in spite of surface-structure c-command relationships that appear to violate it. His proposal also discusses a distinction between deep and surface structure with object-control and intransitive subject-control verbs. However, since these do not result in differences in c-command and control relationships and can be established in either case through the straightforward application of the MDP, such structures have been left out of the discussion here.

As Landau (2013) points out there are some fundamental problems with Larson's (1991) proposal. One of the most significant of these is the limitation of his discussion to

a single verb, *promise*. Since the starting point of his argument is the similarity of transitive subject-control *promise* to ditransitive *promise*, it is unclear how or why his analysis would be able to capture other transitive subject-control verbs such as *threaten* or *ask/beg* in situations of control shift. These verbs do not bear the same similarities to ditransitives that are observed with *promise*. That is, like object control verbs, transitive subject control verbs other than *promise* can not take as complements both a direct and an indirect object or a direct object and an oblique prepositional phrase. Therefore, such verbs would not be expected to be subject to the same deep structure transformations undergone by ditransitives. In sum, while Larson's argument does provide a plausible description of how the MDP may capture the transitive subject-control behavior of *promise,* it does not answer how this argument could be applied more generally or, as will be discussed below, transfer easily to more modern analyses of generative grammar, in which the distinction between deep structure and surface structure is conceptualized differently.

The final two articles discussed in this section, Hornstein (1999) and Manzini and Roussou (2000), also represent attempts to explain control through syntactic distance. They depart from Larson, however, in that they do not consider transitive subject-control structures to be derived from ditransitive structures and instead their explanation of control is based on the Minimal Link Condition (MLC). A brief explanation of this condition is necessary before proceeding to discuss these two approaches to control.

The MLC is a constraint on movement proposed to prevent the over generation of ungrammatical structures. It has been applied successfully to this effect to Wh-island and super-raising constructions among others. The Minimal Link Condition as proposed in Chomsky (1995) is stated below.

The Minimal Link Condition (Chomsky 1995)

K attracts α only if there is no β closer to K than α such that K attracts β.

Consider how the MLC applies in the super-raising example of (17) .

16) It seems that Jesse$_i$ is likely t_i to win

17) *Jesse$_i$ seems that it is likely t_i to win

Here, the raising example in (16) is grammatical while the super-raising example in (17) is not. Under the assumptions of Minimalist theory and the MLC, the difference in grammaticality between these two structures can be accounted for in the following manner. In (16) the subject of the embedded non-finite clause, *Jesse*, moves to the specifier position of the TP of the higher clause, *is likely*, in order to satisfy case and feature checking requirements. In (17), however, the specifier position of the TP of *is likely* is occupied by the expletive *it* and is therefore unavailable. This means that the only remaining available position for the DP *Jesse* to check case is the specifier position of the matrix clause. However, the MLC prevents ATTRACT from applying to the DP *Jesse* due to the expletive *it* intervening between the specifier of the matrix clause and the subject of the non-finite clause. Thus, the structure is (17) is ungrammatical as it violates the MLC.

Returning to the discussion of control, Hornstein's (1999) proposal is developed within his larger aim of collapsing the distinction between control and raising in Minimalism. He contends that, while there is no disagreement that control and raising are structurally distinct, the conditions that derive them do not need to be. And, indeed, given the aims of the Minimalist project if there is no need for separate architecture

governing the behaviour of these two types of structure then it is preferable to analyze them in a similar manner.

Hornstein argues that the theory of control within Minimalism contains unnecessary stipulations and redundancies. He takes issue with the existence of null case, the assertion that NPs may bear only a single theta-role, the distinction between theta-roles and features and restrictions on movement that prevent movement to non-c-commanding and theta positions. He further contends that there is no need for the distinction between trace and PRO or between raising and control. He thus renders the existence of a separate control module unnecessary. Such radical proposals are not without controversy and debate about their merits of has been rich (Culicover and Jackendoff 2001, 493-512; Landau 2003, 471-498; Boeckx and Hornstein 2004, 431-452; Landau 2007, 293; Bobaljik and Landau 2009, 113-132; Boeckx, Hornstein, and Nunes 2010, 111-130) . Leaving aside the feasibility of the radical alterations to Minimalism that he proposes, Hornstein's theory does achieve the stated goal of simplifying the account of control within Minimalism by reducing the MDP to the MLC. However, most importantly for our purposes here, he does not improve the account of transitive subject control. Instead he claims that such structures are marginal and can be accounted for by markedness. He takes evidence from acquisition data (Chomsky 1965) that subject-control is a late acquired structure. While markedness may indeed be important to the explanation of transitive subject control, as Landau (2007) points out, advancing such an account based on the MLC is untenable. The MLC is not a markedness condition and violations of it have strictly ungrammatical consequences. Compare the super-raising structure in (18), which as discussed above is predicted to be

ungrammatical on the basis of the MLC, and the transitive subject control structure in (19).

18) *Pauline appears it is likely to succeed

19) ? Pauline promised Billie to succeed

Under Hornstein's analysis both these structures violate the MLC. However, while acceptability judgments of the structure in (19) may vary, the structure in (18) is clearly less acceptable than (19).

A second account of control to conflate the MDP and the MLC is Manzini and Roussou (2000). While their proposal is less radical in its alterations to Minimalism than Hornstein's it does entail some changes. Specifically, they suggest changes to the notion of how DPs come to be associated with the clauses (IPs) that contain them. In their account, rather than clauses attracting DPs, in order to satisfy feature-checking requirements, they suggest that the reverse is the case (i.e. that DPs attract clauses). This theoretical change allows them to argue that control is merely a case in which a single DP attracts two IPs. They accomplish this by proposing a version of the MLC based on the scope of features.

Scopal Minimal Link Condition

Feature F attracts Fα only down the next F' that also attracts Fα.

This condition would apply to control structures in the following manner. Consider first subject control structure in (20) below. Here, the DP, *Janice*, would be merged directly into the specifier position of the matrix IP to satisfy the D-feature of the IP. The DP Janice would also attract the lower IP, *to mow the lawn*, in order to satisfy the D-feature of this IP. In (22) the DP *Sarah* would act as a complement to the main verb *force*

and also attract the lower IP, *to mow the lawn*, in order to satisfy its D-feature. Thus, Manzini and Roussou are able to provide a satisfactory account of both subject and object control.

20) Janice$_i$ promised PRO$_i$ to mow the lawn *Intransitive Subject Control*

21) Janice$_i$ promised Sarah PRO$_i$ to mow the lawn *Transitive Subject Control*

22) Janice forced Sarah$_i$ PRO$_i$ to mow the lawn *Object Control*

However, their account does not improve the understanding of transitive subject control. Consider the transitive subject control structure (21). In this sentence both the subject and the object of the main verb, *Janice* and *Sarah* respectively, bear a D-feature and therefore are both potential attractors for the non-finite complement clause. However, according to Manzini and Roussou's version of the MLC Janice would be prevented from attracting the lower clause because the scope of this DP's D-feature would only extend as far as the next DP, in this case *Sarah*. Therefore, their proposal suffers from the same limitations observed with the application of the MDP.

Manzini and Roussou state, briefly, that transitive subject control can be accounted for by some version of Larson's proposal. They do not discuss the details of how this would operate in conjunction with their account. However, it does not appear that an explanation for such structures based on a double object explanation would be tenable. This is due primarily to the fact that a key feature of the double object theory is its reliance on a distinction between surface structure and deep structure. This distinction is contrary to Manzini and Roussou's account as they propose that DPs are merged in situ. And, more broadly, they work within Minimalist theory which, in general, eschews differences between D-structure and S-structure.

1.1.2. Semantic Approaches

The second major body of theory on control is rooted in semantics. Early work within this branch of the literature began with Postal (1970) and his discussion of control within the wider context of co-reference. Echoing other work on co-reference at that time (Bach 1979, 515-531; Bach 1982, 35) he makes use of EQUI-deletion to explain control. This is the idea that unexpressed DPs are deleted at a certain point in the derivational process. Writing within this context, Postal proposes that there is a set of modal constraints that derive control structures. This argument is based on the observation that for certain types of verbs with non-finite clausal complements there is often a corresponding finite complement that is restricted in terms of which modal verb it may occur with. This is exemplified in (23) through (26) below.

23) Jane told $Sarah_i$ PRO_i to leave

24) Jane told $Sarah_i$ that she_i ought to leave

25) $Jane_i$ promised Sarah PRO_i to leave

26) $Jane_i$ promised Sarah that she_i would leave

The structure in (23) exemplifies object control, while the parallel sentence in (24) is a paraphrase of (23) containing a finite complement clause with the modal *ought*. (25) is a transitive subject control structure and the parallel sentence in (26) is a paraphrase of (25) containing a finite complement clause with the *would* modal. Based on this, Postal suggests that there is an underlying modal quality to the non-finite complements of control verbs. The type of control, subject or object, that is associated with an individual verb is dependent on this underlying modal quality. Hence, the unexpressed subject of a non-finite complement clause that is associated with an *ought* modal is controlled by the object of the matrix clause as in (23), while the unexpressed subject of

the non-finite complement clause that is associated with a *would* modal as in (25) is controlled by the subject of the matrix clause.

Importantly, Postal's observations influenced much of the semantics-based literature on control that would follow (Jackendoff 1972; Ruzicka 1983, 309; Chierchia 1984; Farkas 1988, 27-58). Like Postal's, many of these theories would proceed with the assumption that control is a product of the meaning of the control verb and its complements. They would also view control across an object (i.e. transitive subject control) as not in violation of any principle/constraint unlike explanations based in syntax as discussed above.

Following Postal, several theorists began to explore the possible relationship between controller choice and thematic roles. Building on the insights of Jackendoff (1972), Ruzicka (1983) proposes a new account of control based on thematic relations. Ruzicka's aim is to move away from an explanation based purely on syntax and provide one that incorporates syntax, semantics and pragmatics. In similarity to Chomsky (1980), in which an important distinction between subject-control and object-control verbs is their specification in the lexicon as either [+ Subject Control] or [+ Complement Control], Ruzicka maintains that distinctions in the lexicon are important. However, unlike Chomsky, the central idea behind his account is that Control can be explained by the thematic roles that a particular verb imposes on its complements. In the case of subject control, a condition of thematic identity is imposed between the two NPs involved in the control relation (i.e. the subject of the matrix clause and PRO - the subject of the non-finite complement clause) ensuring that the thematic role of both these elements is the same.

27) $John_i$ promised PRO_i to leave

28) $John_i$ promised Mary PRO_i to leave

In example (27), where we have an intransitive subject control verb, the identity of the subject of the matrix clause and of PRO in the non-finite complement clause are the same. Namely, they are both agents. This relationship remains the same in (28), a transitive subject control construction, in which a direct object intervenes between the non-finite complement clause and the subject of the matrix clause. Despite the presence of a second possible controller, the thematic identity condition ensures that the subject of the matrix clause is the controller. Thus, unlike a structural account of control, Ruzicka's explanation manages to derive both transitive and intransitive subject control without resorting to any additional mechanisms within the grammar or positioning transitive subject control as exceptional.

Ruzicka also manages to provide an explanation of object control through thematic relations. For these cases, he proposes that they may be explained through what he terms a thematic distinctiveness condition. Unlike the thematic identity condition used to explain subject control, the thematic distinctiveness condition requires that the identity of the controller and PRO to differ from one another. This prevents subject control structures from occurring with such verbs.

29) John forced $Mary_i$ PRO_i to leave

In (29) the thematic role of Mary is different from that of PRO, the subject of the non-finite complement clause. The thematic role of Mary is goal and PRO is agent. This ensures that despite the availability of the subject of the matrix clause as a possible controller only the direct object will be chosen.

Note that Ruzicka remains vague about the exact meaning of themantic identity/distinctiveness and it appears that he intends these concepts to be relative. Thus, as Farkas (1988) points out, for Ruzicka a case in which the themantic identity condition applies is one in which the themantic similarity between the controller in the matrix clause and the unexpressed subject in the complement clause is close enough not to be relevant to the themantic distinctiveness condition. And, situations in which the themantic distinctiveness condition applies include those in which the themantic similarity between the controller in the matrix clause and the unexpressed subject in the complement clause is distinct enough not to be relevant to the themantic identity condition. This lack of precision in the definition of themantic identity and distinctiveness weakens the overall argument and renders the explanation less convincing.

Chierchia (1984) also explores a connection between thematic relations in control. However, unlike Ruzicka the important factor in Chierchia's analysis is not the similarity or dissimilarity of the controlled element and the controller, but rather, it is their relative positions on a thematic hierarchy. The hierarchy that he proposes is stated below:

Theme > Source > Goal

This hierarchy can be applied in a straightforward manner to those structures exemplified in (30) and (31). Here the subject of the matrix clause *Mary* is the source and the object *John* is the goal. Because the subject *Mary* is positioned above the object *John*, *Mary* will be the controller of the non-finite complement clause. Thus, *promise* in this case is an unmarked control verb according to Cheirchia's account.

30) Mary$_i$ promised John PRO$_i$ to leave

31) Mary$_i$ forced John PRO$_i$ to leave

However, in (31), an object control structure, the thematic roles of *John* and *Mary* are the same as (30) yet the control relations are different. Thus (31) is a marked construction and its violation of the hierarchy must be specified in the lexicon. While Chierchia's account does have the advantage of explaining transitive subject control without resorting to special mechanisms it fails to do the same for object control, and therefore does not represent a significant improvement to the account of control relations overall.

Farkas (1988) seeks to address many of the shortcomings of previous work on control. Her aim is to establish what determines the choice of the controller when there is more than one possible controller present. The solution she proposes is that control phenomena may be captured in terms of a RESPonsibility relation. Before outlining how this relation applies to controller choice, she motivates its independent linguistic relevance by pointing to three constructions that benefit from an explanation based on a RESP relation. The first of these is *in order to* constructions. As seen in (32) and (33) these constructions are only acceptable in situations in which they may be intentionally brought about. Hence, (32) is felicitous while (33) is not.

32) John read *War and Peace* in order to impress Mary

33) # John resembles his father in order to annoy his grandmother

Notice that in (32), the non-finite clause "to impress Mary" describes a situation that may be intentionally controlled, while in (33) the non-finite clause "to annoy his grandmother" is not. Thus, *in order to* clauses must be associated with an intentional situation.

A similar analysis applies to the adverb *intentionally* as seen in (34) and (35). Here (34) is felicitous while (35) is not.

34) John read war and peace intentionally

35) # John resembles his father intentionally

As in the *in order to* constructions above, *intentionally* may only follow those situations in which some initiator is responsible for establishing them (i.e. intentional situations).

Finally, the identity of possible imperative verbs is restricted to those that are compatible with an intentional agent. Thus, (36) and (37) below are felicitous and (38) and (39) are infelicitous as they violate this requirement.

36) Be responsible!

37) Be polite!

38) #Be tall!

39) #Be brown-eyed!

Farkas' analysis is that imperative constructions represent a request on the part of the speaker for the addressee to bring about the situation described by the imperative. Hence, in order to be felicitous, imperatives must refer to situations which are in the control of the addressee.

With this established, Farkas argues that Control is also related to the RESP relation, because the situation described by the non-finite complement clause must be able to be brought about by the controller or the controller must be responsible for the situation in some way. Thus the constructions in (40) and (41) which all describe such situations are felicitous, while the constructions in (42) and (43) are infelicitous as they

describe situations which may not be intentionally controlled. Note that these facts are independent of whether the matrix clause is a subject or object control verb.

40) Polly promised Karen to mow the lawn

41) Karen forced Polly to clean her room

42) # Joe promised Paul to resemble his father

43) # Paul ordered Joe to be short

For Farkas, the crucial distinction between transitive subject and object control is one of lexical specification. For her, object control verbs are only compatible with situations in which the direct object is associated with responsibility for the situation described by the non-finite complement clause. The opposite is the case for subject control verbs which are lexically specified to be compatible only with situations in which the subject of the matrix clause is responsible for the situation described by the non-finite complement clause.

To summarize, Farkas posits the existence of a RESPonsibility relation which describes relationships between initiators and situations. The RESP relation is relevant to the explanation of *in order to* constructions, the use of the adverb *intentionally* and *be* imperatives. It also applies to control and is incorporated into the lexical semantics of control verbs. The RESP relation allows choice of the controller to be accounted for in a similar manner for both transitive subject and object control verbs without additional stipulation.

1.2. Control Shift

In most cases of subject and object control, the controller is fixed to either the subject of the matrix clause (the agent) or to the direct object of the matrix clause (the goal). In cases of control shift, however, the controller 'shifts' to the opposite complement. Control shift was first described by Rosenbaum (1967) and since this time various theories have attempted to provide explanations for it (Breasnan 1982, 343-434; Farkas 1988, 27-58; Sag and Pollard 1991, 63-113) . The precise details of this theory are tangential to the present discussion. However, it is important to identify broadly some of the factors that influence control shift. Farkas (1988) describes three such factors, each of which will be outlined below.

First, the semantics of the matrix verb are important to the instantiation of control shift. Certain verbs are more likely to undergo shift than others. Consider (44) through (47) below.

44) The teacher asked the student to leave

45) The student asked the teacher to leave

46) The teacher told the students to leave

47) The student told the teacher to leave

Here the semantics of *ask* combined with the authority relations between the subject and object of the matrix clause (teacher/student) allow for an object control reading in (44) but a subject control reading when authority relations are reversed in (45). Note that it is possible to imagine a circumstance in which (45) exhibits object control. However, real world knowledge of interactions between teachers and students make subject control more likely. This is not the case for (46) and (47). In this pair of sentences the semantics

of *tell* allow object control to remain fixed regardless of the authority relations of the subject and object of the matrix clause.

The second factor influencing control shift that Farkas notes is the semantics of the embedded event. Consider the subject control structure in (49) and the object control structure in (48) below.

48) The employees asked their boss to stop yelling

49) The employees asked their boss to have a day off

Here, it is the semantics of the embedded event that instantiates the control relations observed. Interacting with these are other semantic factors, namely, the authority relations of the subject and object of the matrix clause combined with knowledge of the real world behaviour of employees, bosses and our expectations of their participation in particular events.

Finally, as has already been mentioned in the discussion of control shift thus far, authority relations of the subject and object of the matrix verb play an important role in the occurrence of control shift. It is most often the case that this factor combined with the semantics of the control verb and the semantics of the embedded event as discussed above allow for control shift phenomena to occur. The facts surrounding control shift are complex. Importantly, though, this complexity further suggests that a full understanding of control must include attention to syntactic, semantic and pragmatic factors. Explanations based in each of these perspectives offer important contributions and most likely control can only be explained by an approach that incorporates each of these perspectives.

1.3. Corpus Data

Unlike the large amount of theoretical literature discussing transitive subject control, investigation into the use of the structure is very limited. Some research has been conducted with corpus data, however. This section discusses evidence from English corpora on the occurrence of transitive subject control *promise*. First, the findings of Egan's 2006 study on the British National Corpus are presented followed by the findings of a pilot study conducted by the author on spoken data from the Contemporary Corpus of American English (COCAE). The results of both studies find that transitive subject control *promise* is a rare structure.

1.3.1. *Promise* in the British National Corpus (Egan 2006)

Egan (2006) examined both written and spoken data within the British National Corpus (BNC). Unlike the work of this thesis, Egan's primary concern is not a deeper understanding of control relations. Rather, in this work, he is interested more generally in the types of complementation that are possible with the verb *promise*. He examined the presence or absence of a direct object, whether the clausal complement was finite or non-finite and, in the case of finite clausal complements, the presence or absence of an overt complementizer. An example of each of these constructions is provided in (50) through (52) below.

50) Sarah promised (Ellie) to change the playlist — *Infinitive*

51) Sarah promised (Ellie) that she would change the playlist — *Finite Overt Complementizer*

52) Sarah promised (Ellie) she would change the playlist — *Finite Null Complementizer*

He found that infinitival complements did not occur with direct objects in British English yet the infinitive form without a direct object was the most frequent overall. The findings of this study are summarized in Table 1 below.

Table 1. The use of *promise* in the British National Corpus (Egan 2006)

Verbal Complement	Direct Object	No Direct Object
Infinitive	0%	46%
Finite Overt Complementizer	5%	8%
Finite Null Complementizer	12%	26%

In keeping with the direction of Egan's study, these findings are not presented in terms of control but rather in terms of complementation structure. However, reinterpreting the results in terms of control is straightforward. All non-finite cases, named infinitive by Egan, are understood to be cases of control. Cases of control that occur with a direct object are understood to be transitive. Thus, most importantly, cases that occur with both a direct object and non-finite clause are taken to be cases of transitive subject control. Figure 3 illustrates Egan's findings again in a manner more informative to the study of control.

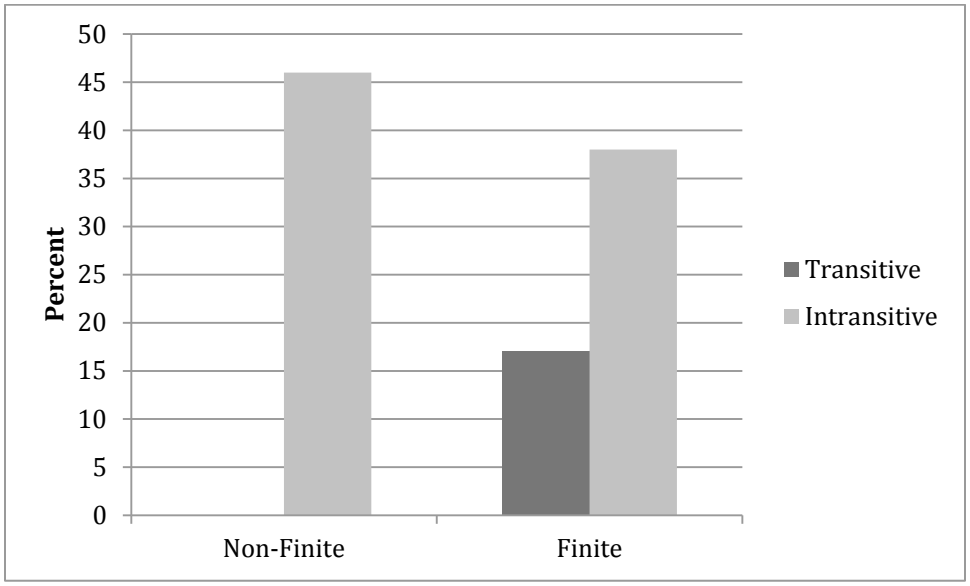

Figure 3. Interpretation of Egan's (2006) results from the perspective of control

As seen in Figure 3 intransitive non-finite structures occurred most often in Egan's study at rate of 46%. The second most frequent form was the intransitive finite tokens at a rate of 38% followed by the transitive finite tokens at 17%. Finally, the transitive non-finite (i.e. transitive subject control) tokens were not present in the data and therefore do not appear here. These findings demonstrate that the frequency of constructions considered are far from equal. The absence of transitive non-finite tokens in the data is particularly striking and represents a trend that has been observed also in American English as seen in the study of the Contemporary Corpus of American English discussed below.

1.3.2. *Promise* in the Contemporary Corpus of American English

Seeking to expand upon the approach of Egan 2006, which was limited to British English, I examined the complementation forms that occur with the verb *promise* in a corpus of American English. However, the scope of my study is more limited. Rather

than examining the frequency of many different types of complementation forms, the results presented here focus only on those structures relevant to an understanding of transitive subject control. Namely, this study is focused on transitive non-finite, transitive finite, intransitive non-finite and intransitive finite structures that occur with promise.

The data considered is taken from the *Contemporary Corpus of American English (COCA).* Specifically, it utilizes the spoken component of this corpus, which consists of transcripts of unscripted speech on 150 American television programs. The corpus contains 83 million words and represents data from 1990 to 2008.

A search for all instances of *promise* in the spoken data was conducted and 4895 tokens were found. The syntax used in the search was [promise*].[v*], which selected instances of *promise* in a verbal form. Originally, a series of different searches was conducted that targeted each complementation form individually. However, due to the difficulty in targeting forms of low frequency, a random sampling of all tokens containing *promise* was deemed to be the best method to achieve a representative sample. 200 tokens were collected at random from these. A set of 200 numbers between 1 and 4895 was generated using a random number generator on *randomnumber.org*. The numbered tokens in the corpus corresponding to the numbers in this set was selected and assessed for relevance. If the listed token fulfilled the necessary criteria it was included in the data set. If not it did not each ascending token was assessed until an appropriate token was found.

As mentioned above, the structures included in this study are transitive non-finite, transitive finite, intransitive non-finite and intransitive finite constructions. Relative percentages of each complementation form exemplified were calculated. Percentages

were derived by dividing the number of tokens exemplifying each complementation form by two hundred (200), the total number of tokens in the data set, as seen in Table 2.

Table 2. The use of promise in the COCAE (Jeffrey 2012)

Condition	Occurrences	Percentage
Transitive Non-Finite	2	1%
Transitive Finite	55	27.5%
Intransitive Non-Finite	97	48.5%
Intransitive Finite	46	23%

As seen in Figure 4 intransitive non-finite structures occurred most often at rate of 48.5%. The second most frequent form was the transitive finite tokens at a rate of 27.5% followed by the intransitive finite tokens 23%. Finally, the transitive non-finite (i.e. transitive subject control) tokens occurred at the lowest overall rate at 1% representing only two tokens in the data.

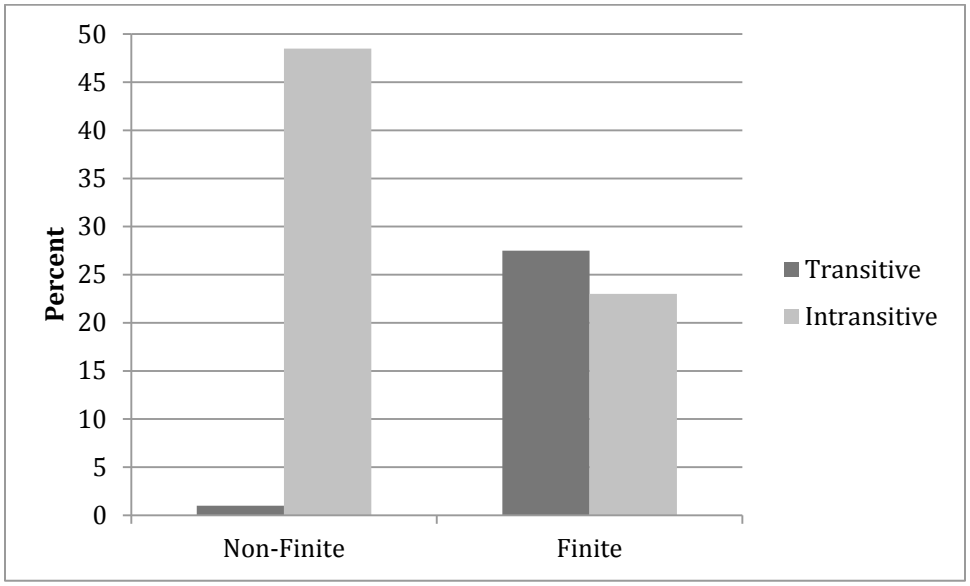

Figure 4. **Results of Study of Corpus of Contemporary American English Jeffrey (2012)**

The results of these two studies are remarkably similar. In both Egan's (2006) British National Corpus and the study of the Contemporary Corpus of American English the intransitive non-finite constructions are the most frequent overall. Of greatest importance, however, is the near or complete absence of transitive subject control *promise* in this study. Transitive subject control *promise* occurs at a rate of 1% or is not present in the data for the COCA study and Egan (2006) respectively.

These results call for further research into the acceptability of transitive subject control, both as a structure occurring with *promise* and with other verbs. However, the low rate of occurrence of this structure does not make a useful amount of data available for analysis. In situations of limited naturally occurring data the use of experimental methods is necessary. Such methods can provide a targeted investigation into the acceptability judgments and language processing behaviour of speakers. The following section introduces the scope and methodology of experimental syntax.

1.4. Experimental Syntax

Experimental syntax developed out of the observation of the need for quantitative methods in syntactic research. A great deal of linguistic research relies on the intuitive judgments of native speakers. Experimental syntax attempts to provide data about the reliability of intuitive judgments that is collected from many speakers and based on the assessment of many examples of the relevant phenomena. Although the acknowledgment of the importance of such data is not new, contemporary debate over its necessity continues.

In the 1970s discussion about the use of quantitative methods to assess the validity of grammaticality and acceptability judgments appeared in the linguistics literature. A contribution to this discussion Labov's (1975) in which the findings of many sources of linguistic research were reviewed and inconsistencies between data from different sources as well as between reported data and native speakers were discovered. In other work of this period, Ross (1979) tested the consistency of ratings assigned to a set of sentences by a group of native speakers. He found that there was little evidence to support a consistent sub-grouping about any of the participants. However, in spite of these findings a consensus on the need for quantitative methods to replace traditional methods of reporting intuitive judgments has not been reached.

Gibson and Fedorenko (2013) call for the inclusion of quantitative methods in both syntax and semantics. They argue that the research in both these fields would be strengthened by a shift away from traditional methodologies. Conversely, Sprouse and Almieda (2013) argue that traditional methods of data reporting are accurate. Their position is based on a large-scale review of relevant literature and an introductory syntax

textbook in which little evidence of inaccuracy in the reporting of linguistics data was found. They conclude that while quantitative methods in syntax and semantics research may be of value for independent reasons, there is no need to augment the work of theoretical syntax and semantics with quantitative methods in order to improve the accuracy of judgment data reported in these fields. The choice between traditional and quantitative methods remains contentious and is active in the literature. This on-going debate marks experimental syntax research as valuable and highlights the need to continue to apply the methods of this field in novel ways.

Experimental Syntax is a diverse and developing field of study. The methods discussed here are not exhaustive but rather represent those most relevant to the work reported in this thesis. Thus, I discuss the methods of acceptability judgment task and self-paced reading experiments.

Experiments that assess the acceptability of syntactic or semantic constructions most often involve either a scalar judgment or a magnitude estimation task. Scalar judgment tasks involve participants assigning a set value within a specified range to an experimental item according to their assessment of the naturalness or acceptability of the item. For example, participants may be instructed to rate an item on a scale between 1 and 7 or 1 and 5 (see Cowart 1997 for a thorough explanation of the design and implementation of scalar acceptability judgment experiments). Although it targets the same information, the design of magnitude estimation experiments is slightly more complex. In such experiments participants are instructed to assign a value to a reference item and then assess all experimental items in comparison to the value assigned to the reference item. The numerical value given to the reference sentence is not constrained. However, the number assigned to the experimental items must be consistent with that of

the reference sentence. Thus, the proportional difference in acceptability between the reference sentence and the experimental item must be reflected in the numerical difference assigned to the two items (Cowart 1997; Sprouse 2007, 123-134) Despite the superficial differences between these two methods, scalar judgement and magnitude estimation, recent research (Fukuda et al. 2012, 328) indicates that they do not differ in accuracy.

The methodology of self-paced reading aims to assess the on-line processing rates of participants. This method assumes that increased reading times are associated with delays in processing. Such experiments present isolated sections of syntactic constructions to participants. Constructions are divided into chunks and presented in a linear order. It is the participant's task to advance to the next section of the sentence using the mouse or keyboard. The time spent on each section is recorded and regions with significantly longer reading times are assumed to be associated with processing difficulty (Just, Carpenter, and Woolley 1982, 228).

All experiments discussed in the thesis were presented to participants using the WebExp software program. It is a well-established software program for presenting psychological and linguistics experiments on computer and over the internet. It has been demonstrated to successfully implement both acceptability judgment task and self-paced reading experiments (Keller, Gunasekharan, and Mayo 2009).

Chapter 2. Methodology and Results

This chapter discusses the methodologies used and results found in the three experiments conducted for this thesis. These include an acceptability judgment experiment using audio stimuli, a self-paced reading experiment and a second acceptability judgment experiment using text stimuli. The discussion of each experiment provides a description of the motivation and research question of the experiment, as well as the participants and methods of recruitment used. Also presented are the design and materials used in each experiment as well as a description of the experimental procedure. Finally, the experimental results are provided and discussed.

2.1. Experiment 1: Acceptability Judgment Task (Audio Stimuli)

As discussed in chapter 1, current investigation into transitive subject control and use of the verb *promise* in such structures in particular has not included much exploration of acceptability and usage data. Thus, this experiment is motivated by the need for improved understanding of the acceptability of transitive subject control structures among native English speakers. It builds on evidence from corpus data that has demonstrated that transitive subject control is a rare syntactic structure occurring with the verb *promise* and seeks to determine if rarity in usage can be correlated with reduced acceptability.

Recall that the results of two separate corpus studies (see chapter 1), Egan's

(2006) investigation of the British National Corpus and a study conducted into spoken data from the Contemporary Corpus of American English (Jeffrey 2012), found that transitive subject control *promise* occurs at a rate of less than one percent. Therefore, it is reasonable to ask to what extent speakers have robust acceptability judgements about these constructions. The following study seeks to do exactly that and explores the following research question:

Research Question of Experiment 1:

Will the verb *promise* in transitive non-finite (i.e. transitive subject control) structures be rated as less acceptable than the verb *promise* in transitive finite, intransitive non-finite and intransitive finite structures?

Participants in this study consisted of a group of eight native speakers of English. All were adults recruited from the author's personal network of friends and family. Experiments were conducted at various locations arranged at the participants' convenience. In all cases experiments were conducted in quiet spaces in which measures were taken to minimize distractions as much as possible and in which, at the time of testing, only the experimenter and participant were present.

This experiment examined two factors each containing two levels and thus had a total of four conditions (2x2=4). The factor of *transitivity* contained the levels *transitive* and *intransitive* and the factor of *clause type* contained the levels *finite* and *non-finite*. This design is summarized in Table 3 below.

Table 3. Factors and Conditions of Experiment 1

Transitivity	Clause Type
Transitive	Finite
	Non-finite
Intransitive	Finite
	Non-finite

The stimuli for this experiment were audio recordings of 96 English sentences, including both test and filler items (32 test items + 64 filler items = 96 items in total). Audio stimuli were chosen in order to parallel the spoken data examined in the Contemporary Corpus of American English. All stimuli were recorded using a hand held Roland R-09HR device and were produced by a native speaker of Canadian English. Four different types of test sentences were examined, each corresponding to one of the four conditions in Table 3 (refer to Appendix A for a full list of experimental stimuli). An example of a sentence corresponding to each of the experimental conditions as well as the sentential frames used to generate the stimuli for each condition is given in Table 4 below.

Table 4. Stimuli template and example sentence by condition for Experiment 1

	Transitive Finite *Promise*
Sentence Frame	[Female personal name A] *promised* [Female personal name B] she would [transitive verb phrase]
Example	Helen promised Crystal she would mow the lawn
	Transitive Non-finite *Promise*
Sentence Frame	[Female personal name A] *promised* [Female personal name B] to [transitive verb phrase]
Example	Jen promised Ruby to mow the lawn
	Intransitive Finite *Promise*
Sentence Frame	[Female personal name A] *promised* she would [transitive verb phrase]
Example	Hazel promised she would mow the lawn
	Intransitive Non-finite *Promise*
Sentence Frame	[Female personal name A] *promised* to [transitive verb phrase]
Example	Lillian promised to mow the lawn

There were eight repetitions of each of the four types of test sentences resulting in a total of 32 stimuli sentences. Two separate groups of filler sentences were also included. One set consisted of 32 repetitions of sentences with a single main verb, *ask,* in the same conditions as the experimental items, see Table 5. These were included in

order to provide balance for the 32 repetitions of the verb *promise* (refer to Appendix A for a full list of ask-filler sentences).

Table 5. Examples of 'ask filler' sentences by condition for Experiment 1

	Finite	Non-finite
Transitive	Sophia asked Zoe if she could eat more vegetables	Ida asked Norma to eat more vegetables
Intransitive	Rita asked if she could eat more vegetables	Kayla asked to eat more vegetables

The second group of sentences consisted of a set of eight control verbs balanced for subject and object control. These items were again divided into the same four conditions as the test items. However, in this case, unlike the experimental sentences or *ask* filler sentences, some of the conditions yielded clearly unacceptable sentences. The inclusion of unacceptable filler sentences was thought to be necessary to encourage participants to use the entire range of the seven-point scale and to help avoid the artificially low ratings that may have resulted if sentences of indeterminate acceptability were compared only to sentences expected to be fully acceptable. Examples of subject-control filler sentences are given in Table 6 and examples of object control filler sentences are given in Table 7 below (refer to Appendix A for a full list of control filler sentences). The *ask* filler sentences as well as the object-control and subject-control filler sentences were each repeated eight times resulting in a total of 64 filler sentences ((4+4) x 8 = 64).

Table 6. Subject-Control Filler Examples for Experiment 1

	Finite	Non-finite
Transitive	*Judith declined Linda she would attend the party	*Margaret declined Alison to attend the party
Intransitive	*Gail declined she would attend the party	Lisa declined to attend the party

Table 7. Object-Control Filler Examples for Experiment 1

	Finite	Non-finite
Transitive	*Marilyn ordered Gloria she should clean the garage	Danielle ordered Betty to clean the garage
Intransitive	*Roberta ordered she should clean the garage	*Tammy ordered to clean the garage

Materials in this experiment were presented to participants on a laptop computer using the software package WebExp (Keller, Gunasekharan, and Mayo 2009) and a set of headphones. In this experiment participants were asked to rate the 96 items discussed above according to 'naturalness' and 'acceptability'. Rating was conducted on a scale of 1 to 7, 1 being “not natural or acceptable” and 7 being “natural or acceptable”. The stimuli and filler sentences were presented in a series of blocks each containing one test sentence, one *ask* filler sentence and one control filler sentence. The order in which the blocks were presented as well as the order of sentences in each block was randomized and presented to each participant in a unique order.

The results of this experiment are summarized in Figure 5. Figure 5 represents the combined means for all participants. Here it is seen that the mean score for the

transitive non-finite condition (4.77) is below all other conditions. The ratings given to the transitive finite (6.55), intransitive non-finite (6.78) and intransitive finite (6.80) conditions are on par. Thus, on average participants rated the transitive non-finite condition below the other three conditions, which were all given similar ratings.

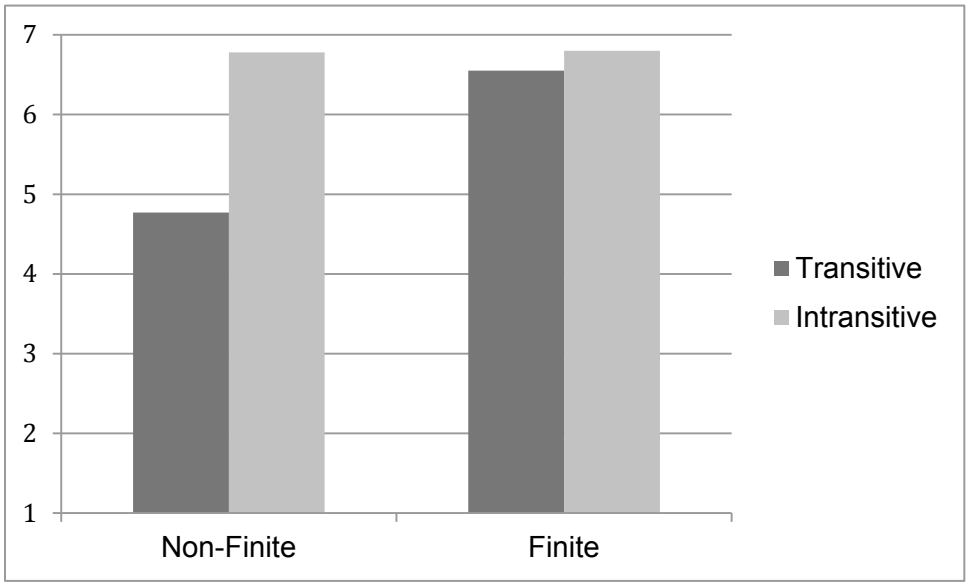

Figure 5. Mean Results of Experiment 1

An ANOVA (analysis of variance) was conducted on the experimental results using the statistical software package R (R Development Core Team 2011). As mentioned previously this experiment examined two factors each containing two levels resulting in a total of four conditions. This design is summarized above in Table 3. The results of this analysis are as follows. Main effects of clause type ($F_{1,7}$ 6.824, $p<0.005$) and transitivity ($F_{1,7}$ 15.69, $p<0.005$) were found. Additionally there was a statistically significant interaction between these two factors ($F_{1,7}$ 7.103, $p<0.005$).

The results of the statistical analysis can address the main research question of this experiment. Here it was found that transitive stimuli were rated below intransitive stimuli and non-finite stimuli were rated below finite stimuli overall. Additionally, the interaction of the two main factors was found to be significant. Thus, transitive non-finite

stimuli were rated below all other stimuli overall.

These results imply that there is a relationship between the low rate of transitive non-finite *promise* in the corpus studies discussed above and the acceptability of this structure. This conclusion leads to questions of why such a correlation may exist. In particular, is the low acceptability of transitive subject control *promise* related merely to its rarity or is a processing difficulty responsible for these results? The following experiment uses a self-paced reading methodology to investigate this question.

2.2. Experiment 2: Self-Paced Reading

This experiment follows the outcome of the auditory rating experiment (see section 2.1) in which it was found that transitive subject control *promise* was rated below other examples of the same verb in intransitive subject control structures as well as transitive and intransitive structures with finite complement clauses. This experiment investigates whether the reduced acceptability of transitive subject control *promise* can also be correlated with a difficultly in processing. That is whether the structure of transitive subject control sentences is more difficult to parse than intransitive control structures or transitive and intransitive sentences with finite complement clauses.

The possibility that transitive subject control structures are relatively more difficult to interpret due to syntactic factors is supported by the theoretical literature. As discussed previously (see chapter 1), unlike object control structures and intransitive subject control structures, transitive subject control structures violate the Minimal Distance Principle. The MDP stipulates that, in control structures, a potential controller (i.e. a DP) may not intervene between the unexpressed subject of the non-finite complement clause and the controller. Thus, as seen in (53) below only in the case of

transitive subject control does a DP, in this case *Lisa*, occur between the subject of the non-finite complement clause and the subject of the matrix clause (i.e. the controller).

53) Kate$_i$ promised Lisa PRO$_i$ to fix the car *Transitive Subject Control*

54) Kate$_i$ promised PRO$_i$ to fix the car *Intransitive Subject Control*

55) Kate forced Lisa$_i$ PRO$_i$ to mow the lawn *Object Control*

This study seeks to examine whether the structural configurations that differentiate transitive subject control structures from the other structures examined result in longer processing times. In order to do so a self-paced reading methodology is employed. Self-paced reading has been evidenced to be a reliable investigative tool in experimental syntax and has been successfully implemented using WebExp software (Keller, Gunasekharan, and Mayo 2009). This method assumes that delays in the reading times of participants are correlated with delays in processing. Thus, this experiment tests the following research question.

Research Question of Experiment 2:

Will the reading times of participants for the transitive non-finite (i.e. transitive subject control) structure sentences be longer than the reading times of the transitive finite, intransitive non-finite and intransitive finite structure? Based on the previous experiment, it is predicated that increased reading times will be found in either the region in which structural differences between the four conditions are introduced (R4) or the region directly following (R5).

Participants in this experiment were 35 native English Speakers living in and around Vancouver, British Columbia at the time of testing. All were recruited from the Simon Fraser University community and each participant was compensated ten dollars for participation. Experiments were conducted in the Experimental Syntax Lab at Simon Fraser University's Burnaby Campus.

This experiment, like the auditory acceptability judgment experiment discussed in section 2.1, has a two factor two level design (2x2=4 conditions). The experimental factors are *transitivity*, containing the levels *transitive* and *intransitive*, and *clause type*, containing the levels *finite* and *non-finite*. This design is summarized in Table 8 below.

Table 8. Factors and Conditions of Experiment 2

Transitivity	Clause Type
Transitive	Finite
	Non-finite
Intransitive	Finite
	Non-finite

Materials consisted of a total of 96 experimental items (24 test + 72 filler = 96). There were six repetitions of each of the four conditions resulting in a total of 24 test items (6 x 4 = 24). Each test item consisted of a sentence with the verb *promise* as the main verb. The structural differences between each condition are exemplified in Table 9.

Table 9. Structure of Experimental Stimuli by Condition for Experiment 2

	Non-finite	Finite
Transitive	...promised X to....	…promised X she would...
Intransitive	...promised to...	…promised she would...

In order to generate the stimuli each of the forms in Table 9 was inserted once into the sentence frames in (56) to (58). Note that in all cases the variable X was filled with a unique personal female name in order to ensure co-reference with the gender-matched pronoun *she* in finite structures. A complete set of the structures in Table 9 applied to the full set of sentential frames is provided in the list of stimuli in Appendix B.

56) The very nosy neighbour living across the street said that X _____ mow the lawn every week.

57) The highly skilled mechanic with the comb-over was certain X_____ fix the car on Saturday.

58) The quiet unassuming shopkeeper that owns the corner store knew X _____ to buy some milk tomorrow morning.

Region	*Stimulus Sentence*
R1	The very nosy neighbour _____ _____ ___ _____ ____ ____ ___ _____ ____ __ ___ ___ ____ _____ _____
R2	___ ____ ____ _____ living across the street ____ ____ ___ _____ ____ __ ___ ___ ____ _____ _____
R3	___ ____ ____ _____ _____ _____ ___ _____ said that X _____ ____ __ ___ ___ ____ _____ _____
R4	___ ____ ____ _____ _____ _____ ___ _____ ____ ____ ___ CONDITION ___ ___ ____ _____ _____
R5	___ ____ ____ _____ _____ _____ ___ _____ ____ ____ ___ _____ ____ __ mow the ____ _____ _____
R6	___ ____ ____ _____ _____ _____ ___ _____ ____ ____ ___ _____ ____ __ ___ ___ lawn _____ _____
R7	___ ____ ____ _____ _____ _____ ___ _____ ____ ____ ___ _____ ____ _____ ___ ____ every week.

Figure 6. Self-Paced Reading Experiment Stimulus Sentence by Region

All materials, including both test items and fillers, were divided into seven regions and presented to participants using the moving window paradigm. Each of the seven regions was presented separately and remained on screen until the participant used a mouse click to advance to the next screen. Figure 6 displays the seven regions that item (56) was divided into and presented as. Region 4 (R4) contained the verb *promise* in the

structures exemplified in Table 9 above. This is indicated by the word ‘condition’ in capital letters (CONDITION). Region 4 was designed as the target region as it is the only region that differs between conditions and is thus the only region in which the structural differences between conditions are apparent.

The 24 stimuli were presented along with 72 filler sentences in random order that was generated uniquely for each participant. The filler sentences were matched with the stimuli sentences for number of regions and number of words in each region, but were otherwise unrelated. A comprehension question was also presented. This was done to determine whether or not participants had, in the case of finite complement clauses, co-referenced the subject of the embedded clause with the intended antecedent or, in the case of control structures, parsed the sentence as subject and not object control. The example in (60) provides the comprehension question presented along with (56), repeated here as (59). The full set of comprehension questions and corresponding responses is included in Appendix B.

59) The very nosy neighbor living across the street said that X _____ mow the lawn every week.

60) Did X promise to mow the lawn?

In this experiment all stimuli were presented to participants on a computer screen using WebExp software. Each region that the stimuli sentences were divided into appeared on the screen individually at a pace controlled by the participants by clicking a mouse. Each test sentence was followed by a yes or no comprehension question. Responses to these questions were given by pressing keys on a keyboard, (y) for yes and (n) for no.

The mean results of this experiment are presented in residual reading time (RRT)

data, calculated in milliseconds, and are summarized in Figure 7 below. Residual reading time is calculated by subtracting the actual reading time of each region from the average reading time expected for each participant in each region. Average reading times are based on the number of characters in each region and are calculated uniquely for each participant. Thus, a negative RRT indicates a reading time that is faster than expected and a positive RRT indicates a reading time slower than expected.

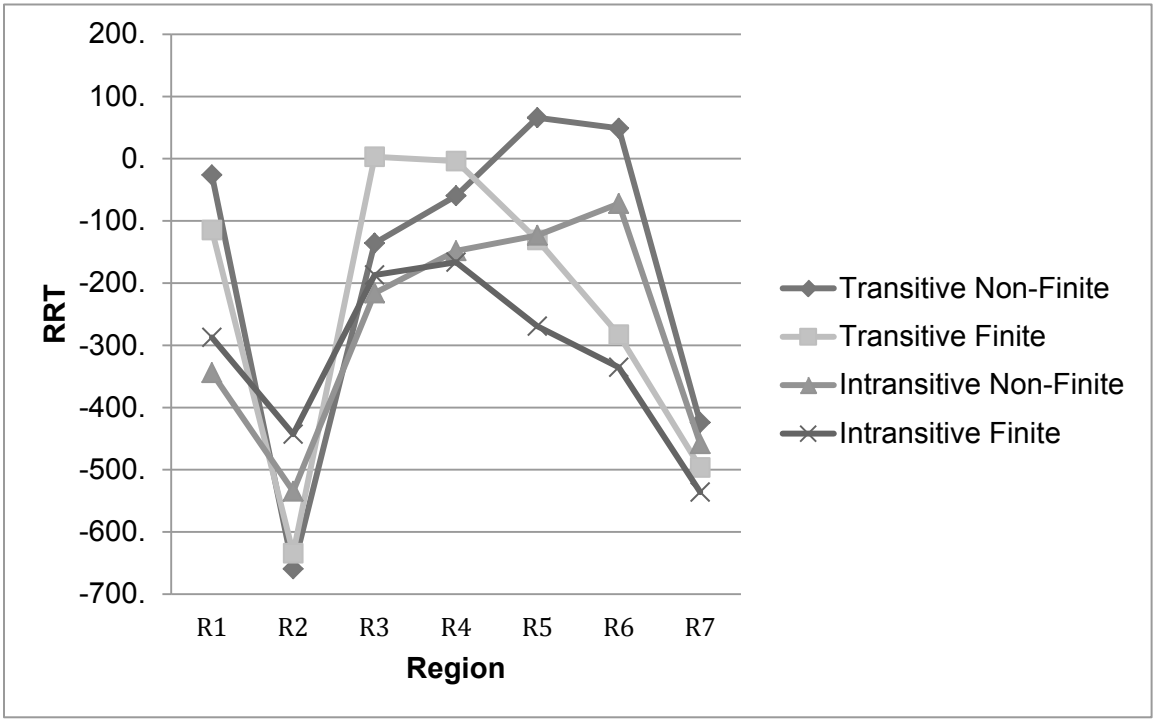

Figure 7. Mean Results of Self-Paced Reading Experiment

The main research question of this experiment is whether the reading times of participants in the transitive non-finite condition will be longer than the reading times in the three other conditions. It was predicted that this delay in reading time would be evident in region 4. That is the region in which structural differences among the four conditions are apparent. The mean scores of region 4 are summarized in Table 10.

Table 10. Mean RRT Score for Region 4

Condition	Mean R4 RRT
Transitive Non-Finite	-59.75
Transitive Finite	-3.86
Intransitive Non-Finite	-148.27
Intransitive Finite	-166.56

These do not suggest a difference in reading times among the four conditions considered. The results of statistical analysis suggest similar conclusions. A 2x2 ANOVA was conducted on the RRT results in region 4 using the statistical software package R (R Development Core Team 2011) . Main effects of Transitivity and Clause Type as well as an interaction between them were investigated. A main effect of transitivity was found ($F_{1,34}$ 15.5, $p<0.001$). However, neither a significant main effect of clause type nor an interaction between transitivity and clause type was found. Thus, the main research question is not supported by data from region 4.

This finding however does not necessarily imply that the main research question of slower reading times in the transitive non-finite condition is unsupported. It is common in self-paced reading experiments to also investigate the region directly following that in which structural differences are introduced (Wagers and Phillips 2009). Given this, consider again the summary of main results presented in Figure 7. Note that in regions five and six the transitive non-finite condition receives the highest RRTs, (65.82) and (48.79) respectively. Indeed, in these regions the RRT of the transitive non-finite condition is the only RRT with a positive value across all four conditions in all 7 regions. That is in these regions only the transitive non-finite condition has a reading time longer than that expected based on the average reading time derived from the total number of characters in the region.

The results of the statistical analysis also suggest that an increase in reading time is found after region 4 (i.e. after structural differences between each of the conditions have been presented to participants.) The same 2x2 ANOVA that was conducted on region four was repeated on RRT data from region five. Here, although a significant interaction between transitivity and clause type was not found, significant main effects of both transitivity *(F* $_{1,34}$ 20.32, $p<0.001$) and clause type (*F* $_{1,34}$ 20.83, $p<0.001$) were found. Both of these significant main effects were in the predicted direction that is in the direction of the transitive and non-finite conditions respectively. This finding supports the main research question that reading times in the transitive non-finite condition are slower than those in the other three conditions.

The results of this study lead to questions of whether similar findings may be replicated employing other methodologies used to investigate processing difficulty. While these results can help to inform an understanding of transitive subject control from a syntactic perspective they are limited in that they do not consider the possible impact of semantic factors on the processing of control structures. Furthermore, this study considers only structures occurring with the verb *promise*. And therefore does not provide a broad account of transitive subject control phenomena. The following section discusses an acceptability judgment task experiment designed to address these shortcomings.

2.3. Experiment 3: Acceptability Judgment Task (Text Stimuli)

This experiment builds on the results of an auditory rating experiment, as seen in section one, and a self-paced reading experiment, as seen in section two. The auditory rating experiment, found that transitive subject control structures were rated below other structures examined and the self-paced reading experiment demonstrated an association between reading time delay and transitive subject control structure. While both of these studies provide results informative to the understanding of transitive subject control in general, they are limited in that they only focus on a single verb, *promise*. Thus, the results of these studies do not distinguish between the syntactic and semantic facts that are unique to the verb *promise* and those that relate to transitive subject control more broadly. Clearly a thorough analysis of transitive subject control requires consideration of more than a single verb.

Therefore, this study analyzes the acceptability of transitive subject control structures containing four different verbs (*promise, threaten, ask*, and *beg*). The scope of this study is additionally broadened to consider the influence of both syntax and semantics, as well as the interaction of these, on acceptability. The aim here is not only to provide a description of the acceptability of transitive subject control but also to provide an account that may inform theoretical investigations into this type of control. Specifically, the objective is to better understand which aspects of the syntactic and semantic theoretical approaches best account for transitive subject control.

This experiment examines two factors; control type, containing the levels subject control and object control and control shift (see chapter 1 for a detailed discussion of control shift), containing the levels shifted and canonical (i.e. structures not under the influence of control shift). The design of this experiment relies on the assumption that

there is an additive effect of syntactic/semantic violations, that is, the greater the number of both syntactic and semantic violations the lower the acceptability of the construction. In the experimental conditions considered here there are two violations of syntax/semantics thought to be relevant. One is a violation of the Minimal Distance Principle (see chapter 1 for further discussion). Recall that the MDP is violated in all cases in which a potential controller (i.e. a DP) intervenes between PRO and the controller in control structures. Thus, all transitive subject control structures and all subject control stimuli in this experiment are predicted to violate the MDP. The other relevant violation concerns lexical semantics. It is assumed that a violation is incurred in all cases in which the control structure associated with a given verb is other than that with which it occurs with most regularly. Namely, this violation applies to all verbs that have undergone control-shift (see again chapter 1 for further discussion). Thus, in this experiment, all stimuli to which this violation applies are in the shifted condition and all those which remain in their canonical control type are in the canonical condition. The main research question for this experiment is stated below.

Research Question of Experiment 3:

Will the acceptability ratings provided by participants correlate with violations of syntactic principles and lexical semantics such that items containing violations will be rated as less acceptable than those that do not? It is predicted that constructions that violate the Minimal Distance Principle (i.e transitive subject control) and constructions violating the lexical semantics of verbs (i.e. shifted control structures) will be rated below structures that do not incur such violations.

Following from this research question, the acceptability rating scores predicted to be assigned to the stimuli are in the following order; canonical object control will be rated

the highest as no violation of syntax or semantics is associated with this condition. The canonical subject control condition and the shifted object control condition will be rated similarly as these conditions are both associated with a single violation of syntax and semantics respectively. Finally, the shifted subject control condition will be rated lowest overall as it violates both the MDP and lexical semantics. The anticipated violations are summarized in Table 11.

Table 11. Syntactic/Semantic Violations of Experiment 3 Conditions

Control Shift	Control Type	Anticipated Outcome
Canonical	Subject Control	* (MDP violation)
	Object Control	No violations
Shifted	Subject Control	** (MDP and LS violation)
	Object Control	* (Lexical Semantics Violation)

The participants were 25 native English Speakers living in and around Vancouver, British Columbia at the time of testing. All were recruited from the Simon Fraser University community and each was compensated ten dollars for participation. Experiments were conducted in the Experimental Syntax Lab at Simon Fraser University's Burnaby Campus.

The factors in this experiment are control type, containing the levels subject control and object control and shift, containing the levels shifted and canonical. Thus, this experiment has two factors each containing two levels resulting in a total of four conditions (2x2=4). This design is summarized in Table 12 below.

Table 12. Factors and Conditions for Experiment 3

Control Type	Shift
Canonical	Subject Control
	Object Control
Shifted	Subject Control
	Object Control

The materials in this experiment were 4 repetitions of each condition resulting in a total of 16 test items (4x4=16). A set of four verbs was selected for use in these experimental stimuli. These were two transitive subject control verbs (*promise* and *threaten*) and two object control verbs capable of control shift (*ask* and *beg*), as noted by Landau (2013). The verbs *promise* and *threaten* were used in the stimuli for the subject control canonical condition and the object control shifted condition. The verbs *ask* and *beg* were used in the stimuli for the object control canonical and the subject-control shifted conditions. A summary of the verbs used in each condition is provided in Table 13.

Table 13. Verbs Used in Stimuli for Experiment 3

Condition	Verbs
Subject Control Canonical	Promise, Threaten
Subject Control Shifted	Ask, Beg
Object Control Canonical	Ask, Beg
Object Control Shifted	Promise, Threaten

All matrix verbs in these stimuli were past tense and appeared in the structure "…VERB

X to….". An example of a stimulus sentence from each condition is provided in (61) to (64).

61) The player threatened the coach to quit the team. *subject control canonical*

62) The player begged the coach to have more ice time. *subject control shifted*

63) The parent asked the child to take out the garbage. *object control canonical*

64) The parent promised the child to stay up late on the weekend. *object control shifted*

Participants were also presented with 130 filler sentences. 72 of which were sentences from a separate experiment on co-reference. The fillers also included 16 control sentences, 16 passive sentences derived from control-sentences and 16 finite sentences in the same conditions as the experimental items (see Appendix C for a full list of experimental items).

In this experiment participants were asked to rate the 146 stimuli (16 test items + 130 fillers = 146) on a seven-point scale of 'naturalness and acceptability'; 1 being "not natural or not acceptable" and 7 being "natural or acceptable". In order to determine whether or not participants had interpreted the stimuli using the intended control structure a comprehension question followed the presentation of each stimulus sentence. Participants responded to questions by entering 'y' for yes and 'n' for no. Stimuli were presented in a random order uniquely generated for each participant.

The mean results of this experiment are summarized in the Figure 8 (refer to Table 13 above for an outline of the experimental design). Here it can be seen that the object control canonical condition (6.4) is above subject control canonical (4.98), subject control shifted condition (5.25) and object control shifted (4.96). The general pattern

observed in the mean results is found to be significant in the results of the statistical analysis.

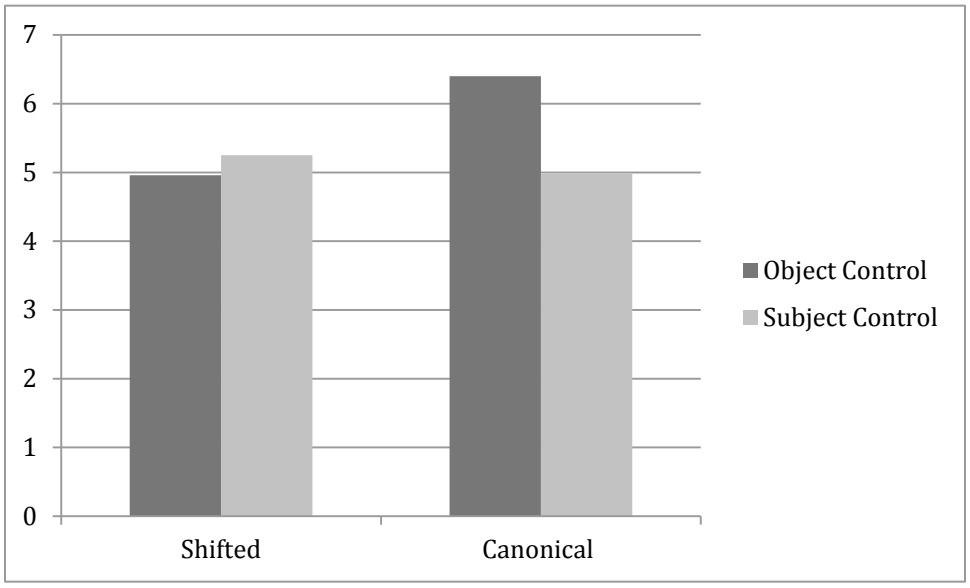

Figure 8. Mean Results of Experiment 3

An ANOVA (analysis of variance) was conducted using the statistical software package R (R Development Core Team 2011) . Here the factors of control type and shift were tested for interaction and main effects. No main effect of control type or shift was found. However, there was a significant interaction between control type and shift ($F_{1,24}$ 5.771, $p<0.005$).

These results pattern with two of the three predicted outcomes of this experiment. The significantly higher rating of object-control unmarked condition above the other three conditions is as predicted as are the similar ratings of the unmarked subject control and the shifted object control conditions. However, contrary to the expected outcomes a lower overall rating for the shifted subject control condition was not found.

Although, these findings are not entirely as expected they do not necessarily contradict the main research question and may differ from the predicted outcomes for

independent reasons. Recall that the main research question predicted that the acceptability ratings provided by participants will correlate with violations of syntactic principles and lexical semantics, such that items containing violations will be rated as less acceptable than those that do not. Specifically, it predicted that constructions that violate the Minimal Distance Principle (i.e transitive subject control) and constructions violating the lexical semantics of verbs (i.e. shifted control structures) will be rated below structures that do not incur such violations.

Thus, the rating of structures that do not incur violations of syntax or lexical semantics (i.e. canonical object control stimuli) above structures that do incur MDP violations (i.e. subject control stimuli) and structures that violate lexical semantics (i.e. shifted stimuli) is as predicted. What remains to be explained however is why the shifted subject control condition, which was expected to incur two violations, one of the MDP and one of lexical semantics simultaneously, was not rated below the conditions that incur either of these violations in isolation.

Two explanations of why this may be the case appear possible. The first is that, contrary to assumptions made in the design of the experiment, multiple simultaneous violations of syntax or semantics may not result in greater reductions in acceptability than singular violations alone. If this is true then a lower overall rating of the shifted subject control condition would not be predicted and the results found here would be as expected. A second possibility is that as originally assumed multiple simultaneous violations of syntax or semantics do result in greater reductions in acceptability than singular violations alone. However, the violation of lexical semantics expected for the shifted subject control condition is not manifested in the stimuli examined here.

Determining the possibility of the first scenario is not within the scope of this experiment or the present discussion. However, some evidence is found here in support

of the second. It is possible that the two object-control verbs included in the study (*ask* and *beg*) are highly prone to control shift. Thus, in comparison to *promise* and *threaten*, it is reasonable to expect that these verbs would incur less of a violation of acceptability in circumstances of control shift. Evidence in support of this explanation is found in the responses to the comprehension questions, the results of which are summarized in Figure 9.

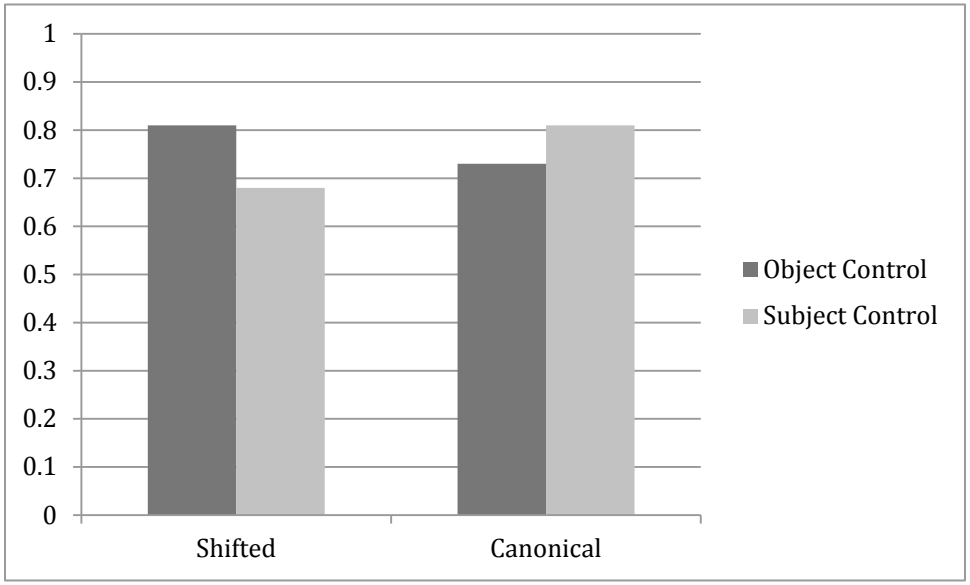

Figure 9. Comprehension Question Results for Experiment 3

Here the shifted subject control tokens and the canonical object control tokens received a lower number of correct responses compared to the canonical subject control and the shifted object control tokens. This indicates that for all occurrences of *ask* and *beg* participants were less likely to interpret the control structure as intended. Thus, it appears that even when authority relations between the subject and direct object of the matrix clause are manipulated in order to instantiate control shift both subject and object control remain possible for *ask* and *beg*. Therefore, it may be concluded that the control relations of *ask* and *beg* are ambiguous. This finding has important implications for the expected outcomes of this experiment.

Considering the acceptability ratings again with the potential high shift-ability of *ask* and *beg* in mind, the similar ratings of the subject control unmarked, subject control shifted and object control shifted conditions may now be explained. Examine Table 14 which presents the violations expected with the propensity of *ask* and *beg* to shift taken into account.

Table 14. Reconsideration of Syntactic/Semantic Violations in Experiment 3

Control Shift	Control Type	Anticipated Outcome
Canonical	Subject Control	* (MDP violation)
	Object Control	No violations
Shifted	Subject Control	* (MDP)
	Object Control	* (Lexical Semantics Violation)

Note, that here the *Shifted Subject Control* condition is only associated with one violation of the MDP and none of lexical semantics. If, as suggested, the control relations of *ask* and *beg* are ambiguous then a violation of lexical semantics would not be expected here. Thus, following this reanalysis, the three conditions (canonical subject control, shifted subject control, shifted object control) are similar because in each case only one violation of syntax or lexical semantics is incurred. The MDP is violated in the case of the two subject control conditions, lexical semantics is violated in the case of the two shifted conditions and no condition incurs both violations simultaneously. Therefore, all conditions, with the exception of the object control canonical which was not associated with any violations, would be expected to receive similar ratings. Recall that this pattern

was demonstrated in the results in which the object control canonical condition was rated significantly above the three other conditions considered.

Chapter 3. Discussion

This chapter relates the results of the three experiments discussed in chapter 2 to the theoretical literature. It proceeds by first providing a summary of the three experiments as well as the two main theoretical approaches to control. Following this the theoretical significance of these results is explored and a re-consideration of the results of the acceptability judgment task experiments is discussed to provide support for the arguments presented. Finally, some brief suggestions for further research are provided.

The series of experiments presented in this thesis is jointly motivated by theoretical difficulties in accounting for transitive subject control and the rare occurrence of this structure in corpus data (Egan 2006; Jeffrey 2012) as discussed in chapter 1. The first experiment employed an acceptability judgment task to examine control structures occurring with the verb *promise*. This experiment examined two factors, *transitivity* and *clause type*, and participants assigned acceptability ratings to four separate conditions (*transitive non-finite, transitive finite, intransitive non-finite* and *intransitive finite*). It sought to determine whether the transitive subject control condition (*transitive non-finite*) would be rated below the three other conditions. The results of statistical analysis found main effects of clause type and transitivity as well as an interaction between these factors. This result supports the prediction that transitive subject control structures occurring with the verb *promise* are of reduced acceptability.

This finding, coupled with the results of the corpus studies mentioned earlier, suggests that the details of the interpretation of such structures require further explanation.

The second experiment questioned whether the low acceptability rating assigned to transitive subject control *promise* could be correlated with a processing difficulty. This experiment employed a self-paced reading methodology and examined the same four conditions as the previous experiment. It questioned whether transitive subject control structures (i.e. those in the transitive non-finite condition) would be associated with longer reading times. The results found reading times increased for participants immediately following the region in which the structural differences between the four conditions was introduced. Significant main effects of both factors examined in this experiment, *transitivity* and *clause type*, were found. The longer reading times associated with transitive subject control structures indicate that such structures incur processing difficulties. This finding leads to questions about the source of processing difficulties in transitive subject control structures that are explored in the following experiment.

The third experiment discussed in this thesis takes a wider view of transitive subject control. It examines this structure with four different verbs and explores the impact of both syntactic and semantic factors on its acceptability. Unlike the previous two experiments, which examine the factors of clause type and transitivity with the single verb *promise*, the third experiment examines the factors of *control type* and *control shift* with the verbs *promise*, *threaten*, *ask* and *beg*. Based on the theoretical literature this study hypothesized that transitive subject control structures would be rated below object control structures and that constructions under the influence of control shift would be rated below those structures in which the canonical control relations of a particular verb

are maintained (see again chapter 1 for a full explanation of the design of this experiment). The results of this study support this hypothesis and a significant interaction of both factors was found.

While the results of all three studies are of theoretical interest the design and results of the final experiment are particularly informative. Recall from chapter 1 that there are two main theoretical accounts of control – a semantic-based explanation and syntactic based explanation. Before exploring what the present research may contribute to the theoretical understanding of control a brief summary of the main tenants of either of these approaches is to be provided.

The basic claim of accounts of control reliant on syntax is that control is related to locality. That is, under these approaches the subject of the non-finite clause becomes associated with a controller in the matrix cause based on the proximity of these two elements. Thus, the noun closest to the non-finite complement clause will be co-referenced with the subject of that clause. Early theories accounted for this based on the Minimal Distance Principle (Jacobs and Rosenbaum 1970) and later work related this to the Minimal Link Condition (Hornstein 1999, 69-96; Manzini and Roussou 2000, 409-447) . This account predicts object control in all cases in which a noun intervenes between the subject of the non-finite complement clause and the subject of the matrix clause and subject control when no such intervening noun phrase occurs. This approach accurately describes the behaviour of both intransitive subject control and object control but cannot provide a satisfactory account of transitive subject control.

The other main theoretical approach is based in semantics. The solutions proposed to account for control within this approach are more diverse than those

suggested by syntactic theorists (Postal 1970, 439; Jackendoff 1972; Ruzicka 1983, 309; Chierchia 1984; Farkas 1988, 27-58). Crucially these theories are not reliant on proximity or distance between nominals for the determination of control. Rather the lexical properties of the matrix verb determine the selection of the controller in such approaches. While many of these approaches are capable of accurately describing the control relations exhibited in transitive subject control structures they are not able to account for the reduced acceptability or rarity of these structures.

The design of the third experiment allows the degree to which either of these accounts contributes to the resolution of controller choice to be compared. These results show that, as predicted by the syntactic accounts, violation of the locality constraints do lead to reductions in acceptability. Further, as would be expected by accounts reliant on lexical semantics, verbs under the influence of control shift (i.e. verbs that do not occur in canonical control relations) also lead to reductions in acceptability. Together these findings point to evidence in support of an analysis of control that incorporates elements from both of these main approaches. Neither account is able to provide an explanation of the results of experiment three in isolation. The syntactic approach cannot explain the reduced acceptability of the stimuli under control shift and similarly the semantic approach has no mechanism for explaining the reduced acceptability of the transitive subject control stimuli.

Thus, given that neither syntax nor semantics is able to adequately account for the facts surrounding the usage and acceptability of transitive subject control, it is reasonable to propose that some interaction of these two methods of interpretation must be responsible for the reduced acceptability observed in the series of experiments discussed here. In order to explore this it is necessary to reconsider the results of

experiments one and three. In particular it is informative to consider the responses of individual participants to each test item. The results of experiment one are displayed in Figure 9 and the results of experiment 3 in Figure 10. Both graphs are organized in the following manner. The horizontal axis corresponds to the individual participants while the vertical axis corresponds to the rating assigned to each experimental item. The letters in the legend of either table refer to the set of experimental items used in either experiment. Thus, the alphabetized lists of stimuli in Tables 15, experiment 1, and 16, experiment 3, correspond to legends in Figures 9 and 10 respectively. Note also that the order in which the participants are arranged along the horizontal axis is based on the mean rating score assigned by each participant from lowest to highest, left to right.

Table 15. Experiment one Transitive Non-Finite Stimuli

a) Jen promised Ruby to mow the lawn.
b) Erin promised Stella to fix the car.
c) Steph promised Sarah to buy some milk.
d) Kat promised Mia to bake more cookies.
e) Mindy promised Liz to fold the laundry.
f) Kelly promised Michelle to unplug the TV.
g) Allie promised Annette to boil more water.
h) Marie promised Bianca to write more songs.

Table 16. Experiment 3 Subject Control Canonical Stimuli

a) The player threatened the coach to quit the team.
b) The player promised the coach to score more goals.
c) The employee threatened the supervisor to file a complaint.
d) The employee promised the supervisor to complete the report.

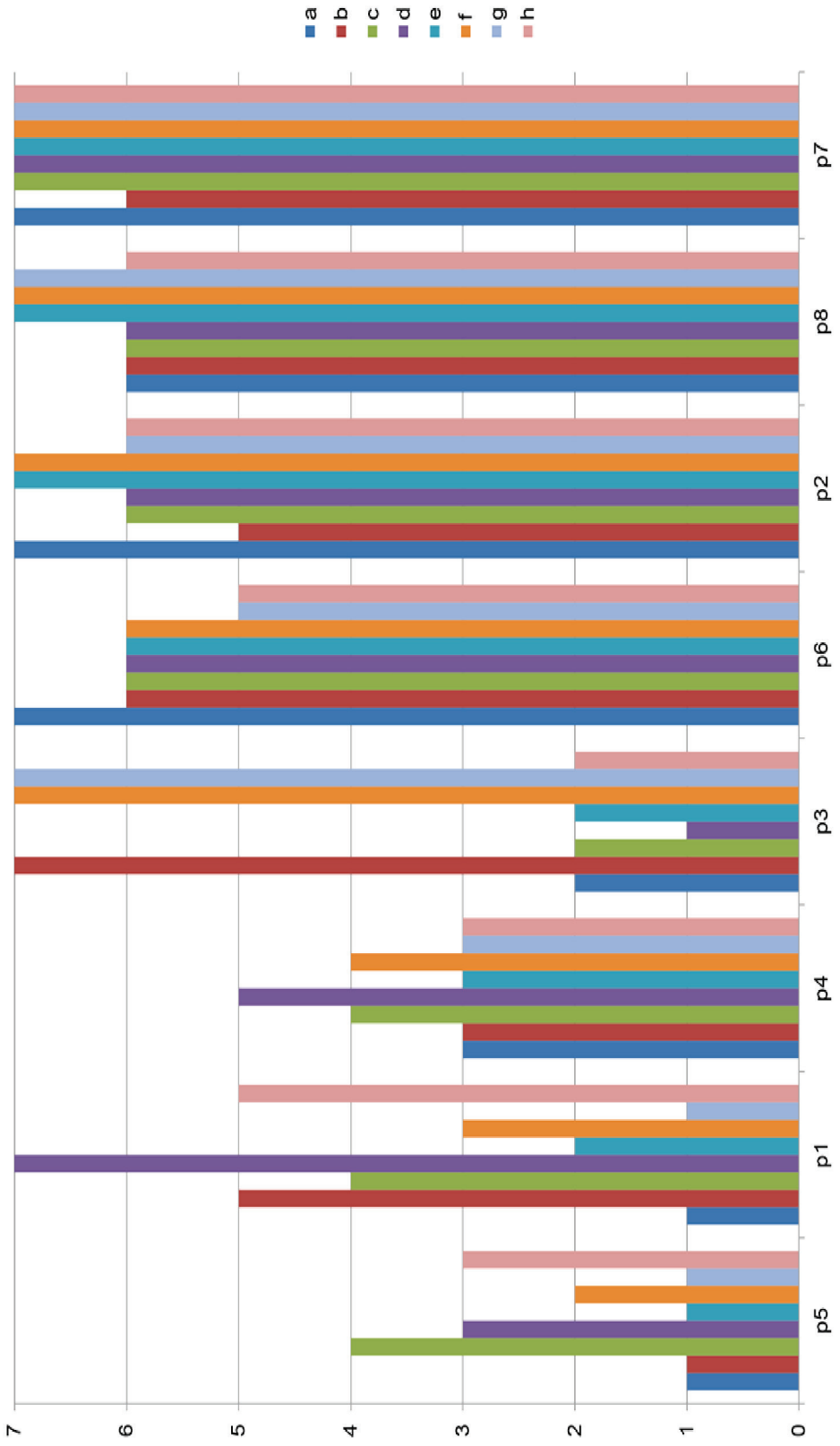

Figure 10. Ratings by Participants in Experiment 1

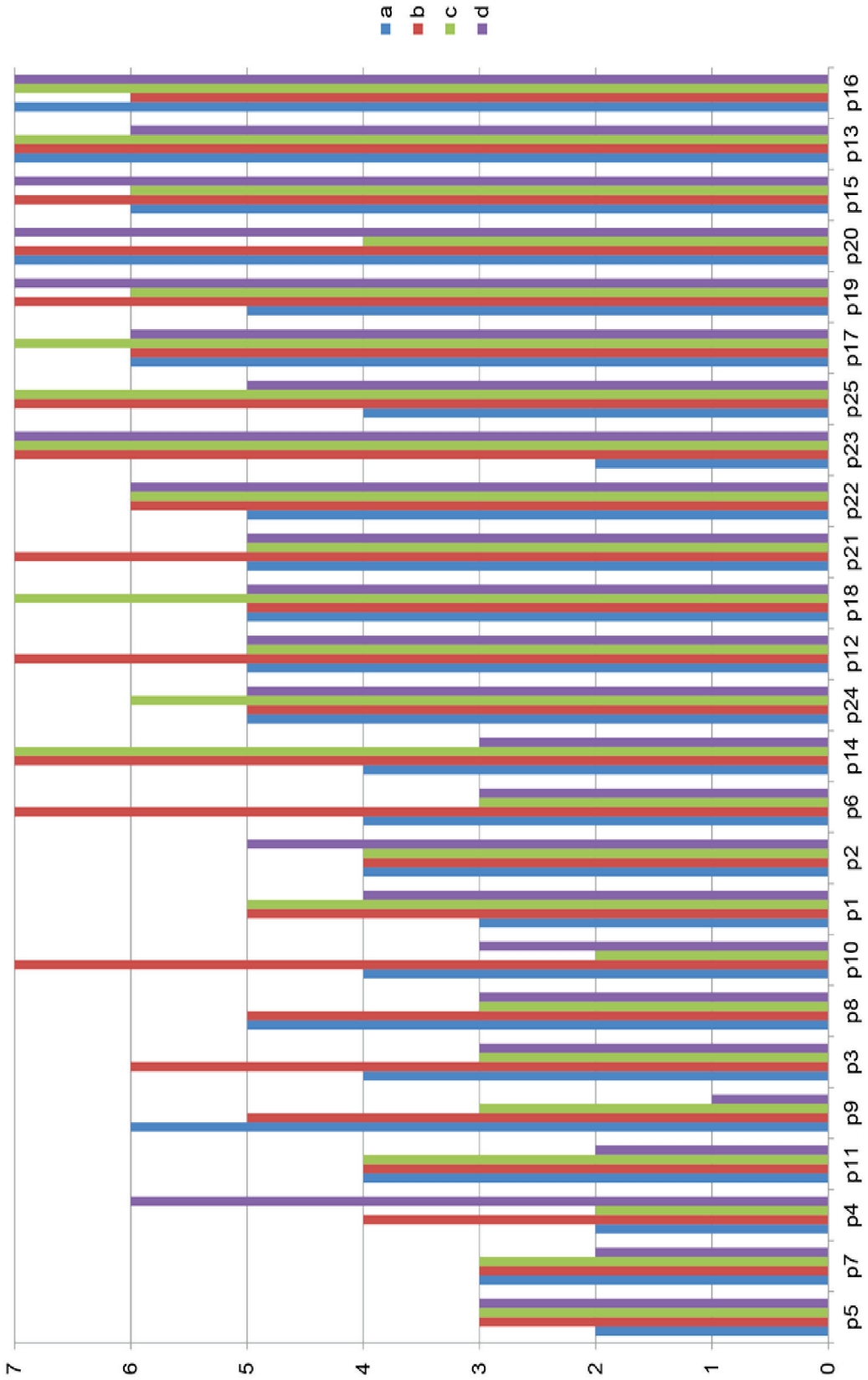

Figure 11. Ratings by Participants in Experiment 3

Consider first the results of experiment one displayed in Figure 10. Here it appears that there is variation both in the ratings assigned between individual participants but also in some cases the ratings by an individual participant may vary widely. Four participants (p6, p2, p8, p7) have assigned consistently high ratings to all items. There is far greater variation among the remaining 4 participants (p4, p1, p5, p3). The ratings provided by some participants, p1 and p3, range from 1 to 7. While, p4 assigns a consistently mid-rank rating to all items ranging from 3 to 5 and, p5 demonstrates that lowest ratings overall with scores of 1 or 2 in the majority of the cases.

The results of experiment 3, presented in Figure 11, also provide evidence for both between and within participant variation. Like experiment one here there is also evidence of participants with consistent rating patterns. Such as, p15, p13 and p16, which assigned a rating of 6 or 7 to all stimuli or p5 and p7 which provided a rating of 2 or 3 to all stimuli. There is also evidence of within participant variation as exhibited by p4, p10, p14 among others in which that responses to the experimental items differs widely.

The results of these two experiments demonstrate not only that both semantic and syntactic strategies are used by speakers to interpret transitive subject control structures but also that there are several different manners in which the use of these strategies may be employed. Recall that based on the theoretical literature transitive subject control is expected to be grammatical according to semantic accounts and ungrammatical according to syntactic accounts due to violation of locality constraints. Thus, it appears that speakers who assign consistently high ratings to stimuli, such as p6, p2, p8 and p7 in experiment one and p15, p13 and p16, in experiment three employ

predominantly semantic strategies to interpret transitive subject control. Conversely, speakers who assign consistently low ratings, such as p5 and p7 in experiment three, appear to employ predominately syntactic strategies of interpretation.

Beyond this it appears the some speakers do not exhibit a preference for either strategy and, thus, both strategies are available simultaneously. It appears that these speakers may interpret transitive subject control structures using semantic strategies in some cases yielding high acceptability ratings and syntactic strategies in others yielding low acceptability ratings. Furthermore, it appears that some speakers interpret structures using both strategies. In such cases I hypothesize that transitive subject control structures are interpretable as expected under a semantic based analysis, however, acceptability would be degraded due to the violation of syntactic locality constraints and mid-rank acceptability ratings are assigned.

The facts surrounding control are indeed complex and incorporate a far broader range of phenomena than that discussed here. The results of these experiments show that only an analysis of transitive subject control that incorporates both the semantic and syntactic accounts put forth in the literature is tenable. The research presented in this thesis provides empirical data on the facts surrounding transitive subject control and demonstrates that both syntax and lexical semantics impact the acceptability of this structure. These results point to questions concerning the nature of the high degree of variation in acceptability ratings observed as well as the impact of sociolinguistic variation of the patterns observed. My hope is that this research points to an analysis of control in which the apparent gulf between syntactic and semantic analysis can be narrowed to some degree and further encourages the use of experimental methods in the ongoing investigation of control phenomena.

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Appendix A.

Experiment 1 Materials

Promise Test Sentences

Transitive non-finite

Jen promised Ruby to mow the lawn

Erin promised Stella to fix the car

Steph promised Sarah to buy some milk

Kat promised Mia to bake more cookies

Mindy promised Liz to fold the laundry

Kelly promised Michelle to unplug the TV

Allie promised Annette to boil more waterp

Marie promised Bianca to write more songs

Transitive Finite

Helen promised Crystal she would mow the lawn

Margaret promised Amina she would fix the car

Ruth promised Alisha she would buy some milk

Virginia promised Molly she would bake more cookies

Frances promised Karen she would fold the laundry

Betty promised Emma she would unplug the TV

Evelyn promised Casey she would boil more water

Florence promised Anne she would write more songs

Intransitive Non-finite

Lillian promised to mow the lawn

Louise promised to fix the car

Edna promised to buy some milk

Martha promised to bake more cookies

Josephine promised to fold the laundry

Lucille promised to unplug the TV

Edith promised to boil more water

Jean promised to write more songs

Intransitive Finite

Hazel promised she would mow the lawn

Grace promised she would fix the car

Lois promised she would buy some milk

Beatrice promised she would bake more cookies

Clara promised she would fold the laundry

Jane promised she would unplug the TV

Rita promised she would boil more water

Agnes promised she would write more songs

Filler Sentences

Ask Transitive Non-finite

Ida asked Norma to eat more vegetables

Lorraine asked Phyllis to paint the bedroom

Maxine asked Charlotte to shovel the driveway

Sylvia asked Jessie to clean the livingroom

Lena asked Nancy to score more goals

Lucy asked Ellen to read the map

Leona asked Eileen to feed the dog

Doris asked Joan to repair the wardrobe

Ask Transitive Finite

Sophia asked Zoe if she could eat more vegetables

Olivia asked Chloe if she could paint the bedroom

Emily asked Lily if she could shovel the driveway

Ella asked Sarah if she could clean the livingroom

Abbey asked Mia if she could score more goals

Maya asked Ruby if she could read the map

Lorna asked Paige if she could feed the dog

Kylie asked Claire if she could repair the wardrobe

Ask Intransitive Non-finite

Kayla asked to eat more vegetables

Ruby asked to paint the bedroom

Lorna asked to shovel the driveway

Mia asked to clean the livingroom

Sophia asked to score more goals

Olivia asked to read the map

Emily asked to feed the dog

Ella asked to repair the wardrobe

Ask Intransitive Finite

Rita asked if she could eat more vegetables

Shirley asked if she could paint the bedroom

Bertha asked if she could shovel the driveway

Geraldine asked if she could clean the livingroom

Juanita asked if she could score more goals

Pearl asked if she could read the map

Laura asked if she could feed the dog

Vivian asked if she could repair the wardrobe

Control Transitive Non-finite

Margaret declined Alison to attend the party

Annette refused Pauline to accept the job

Allie attempted Lindsay to influence the decision

Giselle tried Francesca to win the game

Danielle ordered Betty to clean the garage

Stella urged Michelle to get out more

Kimberly forced Susan to find a new job

Kathleen persuaded Beverly to get a divorce

Control Transitive Finite

Judith declined Linda she would attend the party

Sandra refused Joyce she would accept the job

Carolyn attempted Judy she would influence the decision

Janet tried Donna she would win the game

Marilyn ordered Gloria she should clean the garage

Alice urged Peggy she should get out more

Rose forced Brenda she should find a new job

Sally persuaded Patsy she should get a divorce

Control Intransitive Non-finite

Lisa declined to attend the party

Amy refused to accept the job

Angela attempted to influence the decision

Melissa tried to win the game

Tammy ordered to clean the garage

Julie urged to get out more

Lori forced to find a new job

Teresa persuaded to get a divorce

Control Intransitive Finite

Gail declined she would attend the party

Rosemary refused she would accept the job

Anita attempted she would influence the decision

Darlene tried she would win the game

Roberta ordered she should clean the garage

Dolores urged she should get out more

Jacqueline forced she should find a new job

Audrey persuaded she should get a divorce

Appendix B.

Experiment 2 Materials

Test Sentences	
Transitive Non-Finite	
Stimulus	The very nosy neighbor - living across the street - said that Jen- promised Ruby to- mow the - lawn every week
Question	Did the nosy neighbor say that Jen promised to mow the lawn?
Response	Yes
Stimulus	The highly skilled mechanic – with the comb-over – was certain Erin - promised Stella to - fix the – car – on Saturday
Question	Was the mechanic certain Stella promised to fix the car?
Response	No
Stimulus	The quiet unassuming shopkeeper – that owns the corner - store knew Steph - promised Sarah to - buy some – milk – tomorrow morning
Question	Did the shopkeeper know Steph promised to buy some milk?
Response	Yes
Stimulus	The lazy pastry chef – with the brightly colored - tattoos said Kat – promised Mia to - bake more – strudel – on Friday
Question	Did the pastry chef say Mia promised to bake more strudel?
Response	No
Stimulus	The overworked and anxious - Laundromat employee was very – relieved when Mindy - promised Liz to - fold the – laundry- after lunch
Question	Was the Laundromat employee relieved when Mindy promised to fold to laundry?
Response	Yes
Stimulus	The cable company worker – was surprised when he – heard that Kelly - promised Michelle to - unplug the – TV – after dinner
Question	Was the cable company worker surprised when he heard that Michelle promised to unplug the TV?
Response	No
Transitive Finite	
Stimulus	a. The very nosy neighbor – living across the street - overhead that Helen - promised Crystal she - would mow - the lawn – every week
Question	Did the nosy neighbor say that Crystal promised to mow the lawn?
Response	No
Stimulus	b. The highly skilled mechanic – with the comb-over – was certain Margaret - promised Amina she - would fix - the car – on Saturday

Question	Was the mechanic certain Margaret promised to fix the car?
Response	Yes
Stimulus	c. The quiet unassuming shopkeeper - that owns the corner - store knew Ruth - promised Alisha she - would buy - some milk – tomorrow morning
Question	Did the shopkeeper know Alisha promised to buy some milk?
Response	No
Stimulus	d. The lazy pastry chef – with the brightly colored – tattoos said Virginia - promised Molly she - would bake - more strudel – on Friday
Question	Did the pastry chef say Virginia promised to bake more strudel?
Response	Yes
Stimulus	e. The overworked and anxious - Laundromat employee was very – relieved when Josephine - promised Karen she – would fold the - laundry – after lunch
Question	Was the Laundromat employee relieved when Karen promised to fold to laundry?
Response	Yes
Stimulus	f. The cable company worker – was surprised when he – heard that Lucille - promised Emma she - would unplug the - TV – after dinner
Question	Was the cable company worker surprised when he heard that Betty promised to unplug the TV?
Response	No
Intransitive Non-Finite	
Stimulus	a. The very nosy neighbor – that lives across the – street said Lillian - promised to - mow the – lawn – every week
Question	Did the nosy neighbor say that Lillian promised to mow the lawn?
Response	Yes
Stimulus	b. A highly skilled mechanic – with the comb over – was certain Louise - promised to - fix the – car – on Saturday
Question	Was the mechanic certain Angela promised to fix the car?
Response	No
Stimulus	c. The quiet unassuming shopkeeper - that owns the corner - store knew Edna - promised to - buy some milk – tomorrow morning
Question	Did the shopkeeper know Edna promised to buy some milk?
Response	Yes
Stimulus	d. The lazy pastry chef – with the brightly colored – tattoos said Martha - promised to - bake more - strudel – on Friday
Question	Did the pastry chef say Jenny promised to bake more strudel?
Response	No
Stimulus	e. The overworked and anxious - Laundromat employee was very – relieved when Josephine - promised to - fold the - laundry – after lunch
Question	Was the Laundromat employee relieved when Josephine promised to fold to laundry?

Response	Yes
Stimulus	f. The cable company worker – was surprised when he – heard that Lucille - promised to - unplug the - TV – after dinner
Question	Was the cable company worker surprised when he heard that Kerry promised to unplug the TV?
Response	No
Intransitive Finite	
Stimulus	a. The very nosy neighbor – living across the – street said Hazel - promised she - would mow - the lawn – every week
Question	Did the nosy neighbor say that Sarah promised to mow the lawn?
Response	No
Stimulus	b. A highly skilled mechanic – with the comb over – was certain Grace - promised she - would fix - the car – on Saturday
Question	Was the mechanic certain Grace promised to fix the car?
Response	Yes
Stimulus	c. The quiet unassuming shopkeeper - that owns the corner - store knew Lois - promised she - would buy - some milk – tomorrow morning
Question	Did the shopkeeper know Patty promised to buy some milk?
Response	No
Stimulus	d. The lazy pastry chef – with the brightly colored – tattoos said Beatrice - promised she - would bake - more strudel – on Friday
Question	Did the pastry chef say Beatrice promised to bake more strudel?
Response	Yes
Stimulus	e. The overworked and anxious - Laundromat employee was very – relieved when Clara - promised she - would fold - the laundry – after lunch
Question	Was the Laundromat employee relieved when Mindy promised to fold to laundry?
Response	No
Stimulus	f. The cable company worker – was surprised when he – heard that Jane - promised she - would unplug - the TV – after dinner
Question	Was the cable company worker surprised when he heard that Jane promised to unplug the TV?
Response	Yes
Filler Sentences	
Stimulus	1. A very young manager – of the company fired – a reporter who – (he) defamed – the senator – shamelessly – last year
Question	Did a reporter defame the senator?
Response	Yes
Stimulus	2. A very young manager – fired a reporter who – the editor thought – (he) defamed – the senator – shamelessly – last year
Question	Did the editor think a manager defamed the senator?
Response	No

Stimulus	3. A manager fired a – reporter who Mary knew – that John insisted – (he) insulted – the senator – shamelessly – last year
Question	Did John insist that a reporter insulted the senator?
Response	Yes
Stimulus	4. A very young manager – fired a reporter who – the fact that – (he) blackmailed – the senator – shamelessly – was a secret
Question	Did a manger blackmail the senator?
Response	No
Stimulus	5. A manager fired a – reporter who the editor – was angry because – (he) defamed – the senator – shamelessly – last year
Question	Did a reporter defame the senator?
Response	Yes
Stimulus	6. A young manager fired – a reporter who the – editor speculated why – (he) defamed – the senator – shamelessly – last year
Question	Did a manager defame the senator?
Response	7. A compassionate student adviser – with gray hair met – an undergraduate who – (he) insulted – the lecturer – remorselessly – last semester
Stimulus	Did an adviser insult the lecturer?
Question	No
Response	8. A compassionate student adviser – met an undergraduate who – the TA said – (he) insulted – the lecturer – remorselessly – last semester
Stimulus	Did the TA say an undergraduate insulted the lecturer?
Question	Yes
Response	9. An adviser met an – undergraduate who Jane thought – that Tom said – (he) insulted – the lecturer – remorselessly – last semester
Stimulus	Did Jane think that Tom said an adviser insulted the lecturer?
Question	No
Response	10. A compassionate student adviser – met an undergraduate who – the rumor that – (he) insulted – the lecturer – remorselessly – was widespread
Stimulus	Was a rumor that an undergraduate insulted the lecturer widespread?
Question	Yes
Response	11. An adviser met an – undergraduate who the TA – was upset because – (he) insulted – the lecturer – remorselessly – last semester
Stimulus	Did an adviser insult the lecturer?
Question	No
Response	12. A student adviser met – an undergraduate who the – TA wondered why – (he) insulted – the lecturer – remorselessly – last semester
Stimulus	Did an undergraduate insult the lecturer?
Question	Yes
Response	13. An extremely loud and – impatient police detective interrogated – a man who – (he) behaved – very suspiciously – while loitering – at the mall
Stimulus	Did a man behave suspiciously at the mall?
Question	Yes

Response	14. An impatient police detective – interrogated a man who – the guard thought – (he) behaved – very suspiciously – while loitering – at the mall
Stimulus	Did the guard think a detective behaved suspiciously at the mall?
Question	No
Response	15. A detective interrogated a – man who Bill overheard – that Jeff thought – (he) kissed – the woman – mistakenly – on Friday
Stimulus	Did Bill overhear that Jeff thought a man kissed the woman?
Question	Yes
Response	16. An impatient police detective – interrogated a man who – the suggestion that – (he) kissed – the woman – was outrageous
Stimulus	Was the suggestion that a detective kissed the woman outrageous?
Question	No
Response	17. A detective interrogated a – man who the lawyer – was frustrated since – (he) kissed – the woman – mistakenly – on Friday
Stimulus	Did a man kiss the woman?
Question	Yes
Response	18. A police detective interrogated – a man who the – lawyer knew why – (he) kissed – the woman – mistakenly – on Friday
Stimulus	Did a detective kiss the woman?
Question	No
Response	19. A moderately famous director – from Nova Scotia hired – an actor who – (he) received – thirty million – dollars – per film
Stimulus	Did a director receive thirty million dollars per film?
Question	No
Response	20. A moderately famous director – hired an actor who – the screenwriter thought – (he) received – thirty million – dollars – per film
Stimulus	Did the screenwriter think an actor received thirty million dollars per film?
Question	Yes
Response	21. A director hired an – actor who Anna said – that everyone knew – (he) received – thirty million – dollars – per film
Stimulus	Did Anna say that everyone knew a director received thirty million dollars per film?
Question	No
Response	22. A moderately famous director – hired an actor who – the claim that – (he) received – thirty million – dollars – was surprising
Stimulus	Was the claim that an actor received thirty million dollars surprising?
Question	Yes
Response	23. A director hired an – actor who the screenwriter – was shocked because – (he) received – thirty million – dollars – per film
Stimulus	Was the screenwriter shocked because a director received thirty million dollars per film?
Question	No
Response	24. A famous director hired – an actor who the – screenwriter asked whether

	– (he) received – thirty million – dollars – per film
Stimulus	Did the screenwriter ask whether an actor received thirty million dollars per film?
Question	Yes
Response	25. A young reporter – who the senator – and the congressman – sued (him) last year – for defamation – called – a lawyer
Stimulus	Did the senator and the congressman sue a reporter last year?
Question	Yes
Response	26. A young reporter – who the editor – thought the senator – sued (him) last year – for defamation – called – a lawyer
Stimulus	
Question	Did the editor think the senator sued a lawyer last year?
Response	No
Stimulus	27. A reporter who – Mary knew that – John insisted Bob – sued (him) last year – for defamation – called – a lawyer
Question	Did John insist that Bob sued a reporter last year?
Response	Yes
Stimulus	28. A young reporter - who the fact – that the senator – sued (him) last year – was a secret – called – a lawyer
Question	Was it a secret that the senator sued a lawyer last year?
Response	No
Stimulus	29. A reporter who – Bob was angry – because the senator – sued (him) last year – for defamation – called – a lawyer
Question	Was Bob angry because the senator sued a reporter last year?
Response	Yes
Stimulus	30. A reporter who – the editor wondered – whether the senator – sued (him) last year – for defamation – called – a lawyer
Question	Did the editor wonder whether the senator sued a lawyer last year?
Response	No
Stimulus	31. An overachieving undergraduate – who the professor – and the TA – failed (him) mistakenly – on the exam – emailed – a classmate
Question	Did the professor and the TA fail a classmate on the exam?
Response	No
Stimulus	32. An overachieving undergraduate – who the adviser – thought the professor – failed (him) mistakenly – on the exam – emailed – a classmate
Question	Did the adviser inquire whether the professor failed an undergraduate on the exam?
Response	Yes
Stimulus	33. An undergraduate who – Kelly thought that – Anna said the professor – failed (him) mistakenly – on the exam – emailed – a classmate
Question	Did Kelly think that Anna said the professor failed a classmate on the exam?
Response	No
Stimulus	34. An overachieving undergraduate – who the fact – that the professor –

	failed (him) mistakenly – was surprising – emailed – a classmate
Question	Did the professor fail an undergraduate on the exam?
Response	Yes
Stimulus	35. An undergraduate who – Ellie was upset – because the professor – failed (him) mistakenly – on the exam – emailed – a classmate
Question	Was Ellie upset because the professor failed a classmate on the exam?
Response	No
Stimulus	36. An undergraduate who – the adviser inquired – whether the professor – failed (him) mistakenly – on the exam – emailed – a classmate
Question	Did the adviser inquire whether the professor failed an undergraduate on the exam?
Response	Yes
Stimulus	37. An elderly man – who the policeman – and the investigator – arrested (him) last night – at the bank – talked to – a detective
Question	Did the policeman and the investigator arrest an elderly man last night?
Response	Yes
Stimulus	38. An elderly man – who the guard – thought the investigator – arrested (him) last night – at the bank – talked to – a detective
Question	Did the guard think the investigator arrested a detective last night?
Response	No
Stimulus	39. A man who – Paul claimed that – Rick alleged the investigator – arrested (him) last night – at the bank – talked to – a detective
Question	Did Paul claim that Rick alleged the investigator arrested a man last night?
Response	Yes
Stimulus	40. An elderly man – who the allegation – that the investigator – arrested (him) last night – was unfounded – talked to – a detective
Question	Was the allegation that the investigator arrested a detective unfounded?
Response	No
Stimulus	41. A man who – Joe was shocked – because the investigator – arrested (him) last night – at the bank – talked to – a detective
Question	Was Joe shocked because the investigator arrested a man last night?
Response	Yes
Stimulus	42. A man who – the sheriff speculated – whether the investigator – arrested (him) last night – at the bank – talked to – a detective
Question	Did the sheriff speculate whether the investigator arrested a detective last night?
Response	No
Stimulus	43. An underemployed actor – who the producer – and the agent – recommended (him) last week – for the role – visited – a hairdresser
Question	Did the producer and the agent recommend a hairdresser for the role?
Response	No
Stimulus	44. An underemployed actor – who the screenwriter – heard the producer – recommended (him) last week – for the role – visited – a hairdresser

Question	Did the screenwriter hear the producer recommended an actor for the role?
Response	Yes
Stimulus	45. An actor who – Sean suspected that – Chris knew the producer – recommended (him) last week– for the role – visited – a hairdresser
Question	Did Sean suspect that Chris knew that producer recommended a hairdresser for the role?
Response	No
Stimulus	46. An underemployed actor – who the news – that the producer – recommended (him) last week – for the role – was exciting – visited – a hairdresser
Question	Was the news that the producer recommended an actor for the role exciting?
Response	Yes
Stimulus	47. An actor who – Mike was disappointed– because the producer – recommended (him) last week – for the role – visited – a hairdresser
Question	Was Mike disappointed because the producer recommended a hairdresser for the role?
Response	No
Stimulus	48. An actor who – the screenwriter inquired – whether the producer – recommended (him) last week – for the role – visited – a hairdresser
Question	Did the screenwriter inquire whether the producer recommended an actor for the role?
Response	Yes

Appendix C.

Experiment 3 Materials

Test Sentences	
Subject Control Unshifted	
Stimulus	The player threatened the coach to quit the team.
Question	Did the player threaten that the coach would quit the team?
Response	No
Stimulus	The player promised the coach to score more goals.
Question	Did the player promise that the coach would score more goals?
Response	No
Stimulus	The employee threatened the supervisor to file a complaint.
Question	Did the employee threaten that the supervisor would file a complaint?
Response	No
Stimulus	The employee promised the supervisor to complete the report.
Question	Did the employee promise that the supervisor would complete the report?
Response	No
Subject Control Shifted	
Stimulus	The player asked the coach to miss the next practice.
Question	Did the player ask if the coach would miss the next practice?
Response	No
Stimulus	The player begged the coach to have more ice time.
Question	Did the player beg that the coach have more ice time?
Response	No
Stimulus	The employee asked the supervisor to have a day off.
Question	Did the employee ask if the supervisor could have a day off?
Response	No
Stimulus	The employee begged the supervisor to work more overtime.
Question	Did the employee beg that the supervisor work more overtime?
Response	No
Object Control Unshifted	
Stimulus	The parent asked the child to take out the garbage.
Question	Did the parent ask if the child would take out the garbage?
Response	Yes
Stimulus	The parent begged the child to follow the rules at daycare.
Question	Did the parent beg that the child follow the rules at daycare?

Response	Yes
Stimulus	The judge asked the defendant to answer the lawyer's questions.
Question	Did the judge ask if the defendant would answer the lawyer's questions?
Response	Yes
Stimulus	The judge begged the defendant to obey the rules of the court.
Question	Did the judge beg for the defendant to obey the rules of the court?
Response	Yes
Object Control Shifted	
Stimulus	The parent threatened the child to go to bed without dinner.
Question	Did the parent threaten that the child would go to bed without dinner?
Response	Yes
Stimulus	The parent promised the child to stay up late on the weekend.
Question	Did the parent promise that the child could stay up late on the weekend?
Response	Yes
Stimulus	The guard threatened the prisoner to remain in solitary confinement longer.
Question	Did the guard threaten that the prisoner would remain in solitary confinement longer?
Response	Yes
Stimulus	The guard promised the prisoner to have more outdoor exercise time.
Question	Did the guard promise the prisoner that the prisoner would have more outdoor exercise time?
Control Sentences	
Finite Subject Control Unshifted	
Stimulus	The duchess threatened the prince that she would pursue a divorce.
Question	3.1.1. id the duchess threaten that the prince would pursue a divorce?
Response	No
Stimulus	The husband promised the mid-wife that he would practice Lamaze with his wife.
Question	Did the husband promise that he would practice Lamaze with his wife?
Response	Yes
Stimulus	The prime minister threatened the queen that he would cancel his visit.
Question	Did the prime minister threaten that he would cancel his visit?
Response	Yes
Stimulus	The little boy promised the nanny that he would brush his teeth.
Question	Did the little boy promise that the nanny would brush her teeth?
Stimulus	No
3.1.2. *inite Subject Control Shifted*	*F*
Stimulus	The duchess asked the prince if she could visit the queen less often.
Question	Did the duchess ask if the prince could visit the queen less often?
Response	No

Stimulus	The husband begged the mid-wife for him to remain present during his wife's delivery.
Question	Did the husband beg for himself to remain present during his wife's delivery?
Response	Yes
Stimulus	The prime minister asked the queen if he could give a public address at the palace.
Question	Did the prime minister ask if the queen could give a public address at the palace?
Response	No
Stimulus	The little boy begged the nanny for him to have more cake for dessert.
Question	Did the little boy beg for himself to have more cake for dessert?
Stimulus	Yes
Finite Object Control Unshifted	
Stimulus	The prime minister begged the queen for her to tend to the royal gardens more regularly.
Question	Did prime minister beg the queen for her to tend to the royal gardens more regularly?
Response	Yes
Stimulus	The little boy asked the nanny if she could cut the crusts off the sandwich.
Question	Did the nanny ask the little boy if he could cut the crusts off the sandwich?
Response	No
Stimulus	The husband begged the mid-wife for her to arrive on time for the delivery.
Question	Did husband beg the midwife for her to arrive on time for the delivery?
Response	Yes
Stimulus	The duchess asked the prince if he could fire the grounds keeper for killing the roses.
Question	Did the prince ask the duchess if she could fire the grounds keeper for killing the roses?
Stimulus	No
Finite Object Control Shifted	
Stimulus	The duchess threatened the prince that he would not have access to the children in the event of divorce.
Question	Did the prince threaten the duchess that he would not have access to the children in the event of divorce?
Response	No
Stimulus	The nanny promised the little boy that he could stay up late.
Question	Did the nanny promise the little boy that he could stay up late?
Response	Yes
Stimulus	The queen threatened the prime minister that he would not receive approval for the constitutional changes.
Question	Did the prime minister threaten the queen that she would not receive approval for the constitutional changes?
Response	No
Stimulus	The mid-wife promised the husband that he would not faint during the delivery.
Question	Did the mid-wife promise the husband that he would not faint during the delivery?
Response	3.2. Yes
Filler Passive Subject Control	
Stimulus	The trucker was offered to work a double shift by the company.

Question	Did the trucker offer the company a double shift?
Response	No
Stimulus	The MP was promised to receive more orange juice by the concierge.
Question	Did the concierge promise the MP orange juice?
Response	Yes
Stimulus	The cellist was threatened to lose first position in the orchestra by the conductor.
Question	Did the conductor threaten the cellist with losing first position?
Response	Yes
Stimulus	The foreman was begged to purchase better fall arrest equipment by the roofer.
Question	3.2.1. id the rooofer beg the foreman for better fall arrest equipment?
Response	3.2.2. es
Stimulus	3.2.3. he intern was asked to complete the blueprints by the engineer.
Question	Did the intern ask the engineer to complete the blueprints?
Response	No
Stimulus	The sniper was intended to kill someone else by the sargent.
Question	Did the sniper intend to kill himself?
Response	No
3.2.4. *iller Passive Object Control*	*F*
Stimulus	The longshoreman was forced to clean the washrooms by the supervisor.
Question	Did the supervisor force the longshoreman to clean the washrooms?
Response	Yes
Stimulus	The landscaper was coerced to spray pesticides by the company.
Question	Did the landscaper coerce the company to spray pesticides?
Response	No
Stimulus	The driver was convinced to do a U-turn by the passenger.
Question	Did the passenger convince the driver to do a U-turn?
Response	Yes
Stimulus	The waiter was helped to serve the tables by the bartender.
Question	Did the waiter help the bartender to serve the tables?
Response	No
Stimulus	The sales clerk was assisted to steal the clothes by the customer.
Question	Did customer assist the sales clerk to steal the clothes?
Response	Yes
Stimulus	The pizza chef was ordered to remove the anchovies by the line cook.
Question	Did pizza chef order the line cook to remove the anchovies?
Response	3.2.5. o
Stimulus	3.2.6.

	he hockey player was persuaded to try yoga by the trainer.
Question	Did the trainer persuade the hockey player to try yoga?
Response	Yes
Stimulus	The tenant was permitted to paint the bathroom by landlord.
Question	Did the tenant permit the landlord to paint the bathroom?
Response	No
3.2.7. *iller Subject Control*	*F*
Stimulus	3.2.8. he manager attempted to improve sales at the store.
Question	Did the manager make an attempt to improve sales at the store?
Response	Yes
Stimulus	The trucker offered to work a double shift.
Question	Did the trucker receive an offer to work a double shift?
Response	No
Stimulus	The concierge promised to get the MP more orange juice.
Question	Did the concierge make a promise to get the MP more orange juice?
Response	Yes
Stimulus	The roofer begged to have better fall arrest equipment.
Question	Did the roofer beg for better fall arrest equipment?
Response	Yes
Stimulus	The conductor threatened to cancel the concert.
Question	Did the conductor receive a threat to cancel the concert?
Response	No
Stimulus	The engineer asked to see the blue prints.
Question	Did the engineer make a request to see the blue prints?
Response	Yes
Stimulus	The dancer managed to complete the routine without falling.
Question	3.2.9. id the dancer complete the routine without falling?
Response	3.2.10. es
Stimulus	3.2.11. he sniper intended to hit someone else.
Question	Did the sniper intend to hit himself?
Response	No
Filler Object Control	
Stimulus	The hairdresser forced the client to remove the toupee.
Question	3.2.12. id the hairdresser force the client to remove the toupee?
Response	3.2.13. es

Stimulus	3.2.14. he fisherman coerced the dockworker to join a union.
Question	Did the dockworker coerce the fisherman to join a union?
Response	No
Stimulus	The pilot convinced the passenger to wear an oxygen mask.
Question	Did the pilot convince the passenger to wear an oxygen mask?
Response	Yes
Stimulus	The nurse helped the surgeon to make the incision.
Question	Did the surgeon help the nurse to make the incision?
Response	No
Stimulus	The tour guide assisted the tourists to find the museum.
Question	Did the tour guide assist the tourists to find the museum?
Response	Yes
Stimulus	The officer ordered the driver to step out of the vehicle.
Question	Did the driver give an order to the officer?
Response	No
Stimulus	The lawyer told the witness to lie under oath.
Question	Did the lawyer tell the witness to lie under oath?
Response	Yes
Stimulus	The environmentalist begged the government to stop global warming.
Question	Did the government beg the environmentalist to stop global warming?
Response	No
C-Command Fillers	
Stimulus	The teacher made every boy wipe the board and then the teacher let him leave.
Question	Did the teacher let every boy leave?
Stimulus	The teacher made every boy wipe the board and then the teacher let the boy leave.
Question	Did the teacher let every boy leave?
Stimulus	Every boy wiped the board before the teacher let him leave.
Question	Did the teacher let every boy leave?
Stimulus	Every boy wiped the board before the teacher let the boy leave.
Question	Did the teacher let every boy leave?
Stimulus	3.2.15. he boy wiped the board before the teacher let him leave.
Question	Did the boy let the teacher leave?
Stimulus	The boy wiped the board before the teacher let the boy leave.
Question	Did one boy first wipe the board before a different boy left?
Stimulus	Ms. Brown spoke to each boy and then the principal gave him a detention.
Question	Did the principal give each boy a detention?
Stimulus	Ms. Brown spoke to each boy and then the principal gave the boy a detention.
Question	Did the principal give each boy a detention?
Stimulus	Each boy was spoken to by Ms. Brown before the principle gave him a detention.

Question	Did the principal give each boy a detention?
Stimulus	3.2.16. ach boy was spoken to by Ms. Brown before the principle gave the boy a detention.
Question	Did the principal give each boy a detention?
Stimulus	The boy was spoken to by Ms. Brown before the principle gave him a detention.
Question	Did Ms. Brown give the boy a detention?
Stimulus	The boy was spoken to by Ms. Brown before the principle gave the boy a detention.
Question	Did the same boy first get spoken to by Ms. Brown and then get a detention?
Stimulus	After Andrea repaired each computer, the company sold it.
Question	Did the company sell each computer?
Stimulus	After Andrea repaired each computer, the company sold the computer.
Question	Did the company sell each computer?
Stimulus	3.2.17. ach computer was repaired before the company sold it.
Question	Did the company sell each computer?
Stimulus	Each computer was repaired before the company sold the computer.
Question	Did the company sell each computer?
Stimulus	The computer was repaired before the company sold it.
Question	Did the company sell the computer before they repaired it?
Stimulus	The computer was repaired before the company sold the computer.
Question	Did one computer get repaired and then another one get sold?
Stimulus	The university first sent every female applicant a letter and then they called her on the phone.
Question	Did the university phone every female applicant?
Stimulus	3.2.18. he university first sent every female applicant a letter and then they called the applicant on the phone.
Question	Did the university phone every female applicant?
Stimulus	Every female applicant was sent a letter before the university called her on the phone.
Question	Did the university phone every female applicant?
Stimulus	Every female applicant was sent a letter before the university called the applicant on the phone.
Question	Did the university phone every female applicant?
Stimulus	The female applicant was sent a letter before the university called her on the phone.
Question	Did the female applicant phone a male applicant?
Stimulus	The female applicant was sent a letter before the university called the applicant on the phone.
Question	3.2.19. id any applicant get a phone call from the university?
Stimulus	Roger read each book and then the librarian put it back on the shelf.
Question	Did the librarian put each book back on the shelf?

Stimulus	Roger read each book and then the librarian put the book back on the shelf.
Question	Did the librarian put each book back on the shelf?
Stimulus	Each book was thoroughly read before the librarian put it back on the shelf.
Question	Did the librarian put each book back on the shelf?
Stimulus	Each book was thoroughly read before the librarian put the book back on the shelf.
Question	Did the librarian put each book back on the shelf?
Stimulus	The book was thoroughly read before the librarian put it back on the shelf.
Question	3.2.20. id the librarian thoroughly read the book?
Stimulus	The book was thoroughly read before the librarian put the book back on the shelf.
Question	Did the same book first get thoroughly read and then get put back on the shelf?
Stimulus	After Julia, the fire chief, promoted each fireman, the payroll department increased his salary.
Question	Did the payroll department increase just one fireman's salary?
Stimulus	After Julia, the fire chief, promoted each fireman, the payroll department increased the fireman's salary.
Question	Did the payroll department increase just one fireman's salary?
Stimulus	Each fireman was promoted before the payroll department increased his salary.
Question	Did the payroll department increase just one fireman's salary?
Stimulus	Each fireman was promoted before the payroll department increased the fireman's salary.
Question	Did the payroll department increase just one fireman's salary?
Stimulus	The fireman was promoted before the payroll department increased his salary.
Question	Did the payroll department increase the fireman's salary after the fireman was promoted?
Stimulus	The fireman was promoted before the payroll department increased the fireman's salary.
Question	Did the payroll department increase someone's salary?
Stimulus	The doctor called each nurse into the E.R. and then asked her to help.
Question	Did the doctor ask each nurse to help?
Stimulus	The doctor called each nurse into the E.R. and then asked the nurse to help.
Question	Did the doctor ask each nurse to help?
Stimulus	Each nurse was called into the E.R before the doctor asked her to help.
Question	3.2.21. id the doctor ask each nurse to help?
Stimulus	Each nurse was called into the E.R before the doctor asked her to help.
Question	Did the doctor ask each nurse to help?
Stimulus	Each nurse was called into the E.R. before the doctor asked the nurse to help.
Question	Did the doctor ask each nurse to help?
Stimulus	The nurse was called into the E.R. before the doctor asked her to help.
Question	Did the nurse call the doctor into the E.R.?
Stimulus	The nurse was called into the E.R. before the doctor asked the nurse to help.
Question	Was one nurse called into the E.R. and another nurse asked to help?
Stimulus	The grade that each student receives is recorded in his file.
Question	3.2.22.

	s each student's grade recorded in one single student's file?
Stimulus	The grade that each student receives is recorded in the student's file.
Question	Is each student's grade recorded in one single student's file?
Stimulus	Each student's grade is recorded in his file.
Question	Is each student's grade recorded in one single student's file?
Stimulus	Each student's grade is recorded in the students file.
Question	Is each student's grade recorded in one single student's file?
Stimulus	The student's grade is recorded in his file.
Question	Is the student's grade recorded somewhere?
Stimulus	The student's grade is recorded in the student's file.
Question	Is the student's grade recorded in another student's file?
Stimulus	3.2.23. he policewoman caught every robber and then the sergeant put him in jail.
Question	Did the sergeant put just one robber in jail?
Stimulus	The policewoman caught every robber and then the sergeant put the robber in jail.
Question	Did the sergeant put just one robber in jail?
Stimulus	Every robber was caught by the policewoman before the sergeant put him in jail.
Question	Did the sergeant put just one robber in jail?
Stimulus	Every robber was caught by the policewoman before the sergeant put the robber in jail.
Question	Did the sergeant put just one robber in jail?
Stimulus	The robber was caught by the policewoman before the sergeant put him in jail.
Question	Did the sergeant catch the robber?
Stimulus	3.2.24. he robber was caught by the policewoman before the sergeant put the robber in jail.
Question	Did the sergeant put in jail a robber that the policewoman caught?
Stimulus	The wife of every man sent flowers to his mother.
Question	Did every woman send flowers to her own husband's mother?
Stimulus	The wife of every man sent flowers to the man's mother.
Question	Did every woman send flowers to her own husband's mother?
Stimulus	Every man at the bank sent flowers to his mother.
Question	Did one woman get flowers from every man at the bank?
Stimulus	Every man at the bank sent flowers to the man's mother.
Question	Did one woman get flowers from every man at the bank?
Stimulus	3.2.25. he man at the bank sent flowers to his mother.
Question	Did someone get flowers from their son?
Stimulus	The man at the bank sent flowers to the man's mother.
Question	Did the man at the bank send flowers to some other man's mother?
Stimulus	A female friend of each senator bribed his wife.
Question	Was one woman bribed by each senator's friend?
Stimulus	A female friend of each senator bribed the senator's wife.

Question	Was one woman bribed by each senator's friend?
Stimulus	Each senator up for re-election bribed his best friend.
Question	Did one person get bribed by each senator?
Stimulus	Each senator up for re-election bribed the senator's best friend.
Question	3.2.26. id one person get bribed by each senator?
Stimulus	The senator up for re-election bribed his best friend.
Question	Was the senator ever elected before?
Stimulus	The senator up for re-election bribed the senator's best friend.
Question	Did the senator up for re-election bribe someone else's best friend?
Stimulus	The son of each woman agreed to drive her to the supermarket.
Question	Did the same person agree to drive each woman to the supermarket?
Stimulus	The son of each woman agreed to drive the woman to the supermarket.
Question	Did the same person agree to drive each woman to the supermarket?
Stimulus	Each woman was driven to the supermarket by her son.
Question	3.2.27. as each woman driven to the supermarket by some other woman's son?
Stimulus	Each woman was driven to the supermarket by the woman's son.
Question	Was each woman driven to the supermarket by some other woman's son?
Stimulus	The woman was driven to the supermarket by her son.
Question	Was the woman driven to the supermarket by some other woman's son?
Stimulus	The woman was driven to the supermarket by the woman's son.
Question	Was the woman driven to the supermarket by some other woman's son?