The roles of lexical information and pragmatic processing in the interpretation of complement coercion structures[*]

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Abstract

Two theories of *complement coercion* (as in 'Mary began the book'), termed the *lexico-semantic theory* and the *syntactico-pragmatic theory,* are examined. A new experiment motivated by two factors is reported. Firstly, it has been recently shown that previous studies of complement coercion overlook a confound in their stimuli that renders their findings open to question. Secondly, proponents of the lexico-semantic account assume that complement coercion structures have default interpretations, and that their theory explains how these default interpretations are generated. However, studies that support this assumption contain normed experimental materials that bias specific interpretations. The reaction time data of the new experiment returned null results, but the error data show that the assumption that complement coercion structures have default interpretations is unfounded. The syntactico-pragmatic theory is shown to be flawed on theoretical grounds. However, on the basis of the error data, the lexico-semantic theory is argued to be incomplete without acknowledging that pragmatic processing helps resolve the underspecification inherent in complement coercion.
Keywords: Complement coercion, lexical representations, pragmatic processing

1 Introduction

This paper evaluates two competing theories about how the process of complement coercion (e.g. 'Mary began the book') should be analysed and reports a psycholinguistic test of them using a new experimental paradigm based on comprehension-to-comprehension priming. The first of these theories will henceforth be referred to as the *lexico-semantic* theory. The second will henceforth be referred as the *syntactico-pragmatic* theory. Note that the labels of these two theories are intended to reflect the intentions of their proponents, but interpreting the claims made by either of these theoretical perspectives is not clear cut with respect to which systems govern the process under investigation. The structure of this paper is as follows. First, an overview of the lexico-semantic account is given. For this, a summary of Pustejovsky's (1995) original account of enriched composition is required. Next, psycholinguistic research undertaken from the lexico-semantic perspective is reviewed. It is argued that the lexico-semantic claim that complement coercion structures generally have default interpretations is debateable because of how experimental materials in their studies have been normed. Then, the competing syntactico-pragmatic account described in de Almeida (2004) and Dwivedi and de Almeida (2008) is outlined. It is argued that the syntactico-pragmatic account is not clear with respect to how its components interact and so cannot function as a proper psycholinguistic theory. A recent experiment by Katsika, Braze, Aswini and Piñango (2012) identifies a serious confound in the experimental materials featured in previous complement coercion experiments. On the basis of Katsika et al.'s (2012) finding and the norming problem mentioned above, a new experiment was designed which investigated the extent to which different pairwise

combinations of structures exhibit priming in comprehension. This experiment is reported and its implications and limitations are discussed with respect to both theories. Finally, it is argued that complement coercion structures do not necessarily have default interpretations, and that the lexico-semantic account must ultimately rely on pragmatic theoretical constructs in order to account for how complement coercion structures are interpreted. Therefore, elements from both theories are required in order to account for the resolution of ambiguity in complement coercion structures.

2 The lexico-semantic account
2.1 Pustejovsky's (1995) account of complement coercion

There exist linguistic structures that are interpretable and yet seem to require processes beyond traditional compositional processes. Pustejovsky (1995) called this phenomenon *enriched composition.* The sentences in (1) below demonstrate *complement coercion*, which is a type of enriched composition that has received much attention in the psycholinguistic literature:

(1)   a.   The girl began reading the book.
      b.   The girl began the book.

The meaning of Sentence (1a) can be derived through compositional language processing. However, Sentence (1b) appears to be different. In Sentence (1b), what it is that the girl is doing to the book is not explicitly expressed. An interpretation of (1b) is incomplete until this event is specified: one cannot simply begin a book; one must begin doing something *to* a book. Other things being equal, the interpretation of Sentence (1b) is likely to be the same as the interpretation of sentence (1a). As McElree, Traxler, Pickering, Seely and Jackendoff (2001, p. 18) point out, various features of the sentence and the discourse context in which the sentence appears can motivate different interpretations of these structures. Consider the sentences in (2):

(2)   a.   The author began the book.
      b.   The author began writing the book.
      c.   The author began reading the book.

The interpretation of (2a) is more likely to be (2b) than (2c) unless the context provides enough information to make it clear that the author began reading the book as opposed to writing the book. Pustejovsky (1995) accounts for the potentially varying interpretations of complement coercion structures by positing a set of compositional processes that operate on *types* of semantic entities. Objects are one such type. The lexical representation of an object has a *qualia structure*. A qualia structure is part of the lexical representation of a word that contains information such as an object's physical components and the telic and agentive properties associated with the object that the word denotes. Sentence (2a) can be interpreted as (2b) in some contexts but as (2c) in other contexts because the telic representation of *book* contains two arguments bound to the verb *read*, whereas the agentive representation of *book* contains two arguments bound to the verb *write*. The subject of the verb also has a qualia structure. The information contained in the semantic representation of a verb and the qualia structures of a verb's arguments is combined via a process called *type-shifting* in order to generate an interpretation of sentences such as (1b) and (2a). Jackendoff (1997) notes that certain verbs select for a complement that denotes an event. The verb *begin* is one such example. When a verb such as *begin* appears with a complement that denotes an entity, such as *book,* a process

of type-shifting alters the semantic representation of the complement such that it conforms to the verb's selectional restrictions.

2.2 Psycholinguistic research on complement coercion from the lexico-semantic perspective

In the first psycholinguistic investigation of complement coercion, McElree et al. (2001) designed a self-paced reading time experiment in order to test whether there was behavioural evidence for Pustejovsky's enriched composition theory. McElree et al. (2001) report that reading times for the complement of the verb were longer for complement coercion structures than for traditional compositional structures. This finding is taken to be 'on-line evidence for a type of enriched *lexical* processing' (McElree et al. 2001, p. b17, emphasis added). However, at this stage McElree et al.'s (2001) evidence only shows that complement coercion structures take longer to process than control structures, and this evidence alone does not make it safe to assume anything about *why* complement coercion structures take longer to process than control structures, or which linguistic systems govern these processes.

Traxler, McElree, Williams and Pickering (2005) report four eye-tracking experiments designed to investigate the effects of context on processing complement coercion structures, and to test hypotheses as to which of a set of potential processes is responsible for their increased reading time. These processes are:

(A) When encountering [the complement noun], comprehenders access the word's lexical entry and attempt to integrate various stored senses of this word into the evolving semantic representation of the sentence.

(B) The mismatch between the verb's selectional restrictions and the stored senses of the noun triggers a coercion process.

(C) Comprehenders use salient properties associated with the complement noun and other relevant discourse elements (including but not necessarily limited to the agent phrase) to infer a plausible action that could be performed on the noun.

(D) Comprehenders incorporate the event sense into their semantic interpretation of the VP by reconfiguring the semantic representation of the complement, converting [began [the book]] into [began [reading the book]].

(Traxler et al., 2005, p. 4)

Traxler et al. discount process (A) on the grounds that it is obviously not unique to complement coercion and discount Process (B) in light of Pylkkänen, Liinas, and McElree (2004), who show that complement coercion does not prompt the same MEG activity as semantic relation mismatches. This leaves processes (C) and (D), which are the main focus of Traxler et al.'s (2005) experiments. Experiment 1 aimed to test whether the increased processing cost of coercion should be attributed to process (C): is complement coercion costly because upon reading *The girl began the book,* a reader has to access world knowledge about books and representations of a speaker's communicative intentions in order to infer what the girl is doing to the book? This would not be a lexical process in the sense employed in McElree et al. (2001) because it relies on extra-lexical information that is not necessarily contained in the lexical entries *girl* and *book*. Rather, it is a pragmatic process that makes use of the human ability to operate on contextual information along with representations of a speaker's likely intentions in

order to derive an interpretation of an underspecified utterance. In experiment 1, participants read context sentences followed by target sentences while their eye movements were recorded. Traxler et al. (2005) hypothesise that if the cost of coercion structures lies in inferring implicit content, then a context sentence that makes this content explicit should reduce or eliminate the cost of a coercion structure in the target sentence. An example stimulus is reproduced below, where the underlined word in the first sentence constitutes the explicit introduction of the action that is left implicit in the complement coercion structure featured in the second sentence:

> The contractor had been <u>building</u> in the suburbs. That spring, he began a condominium next to the shopping center.

Traxler et al. (2005, p. 7) find that explicit contextual information does not reduce the cost of complement coercion, and conclude that 'these results are difficult to reconcile with accounts that would attribute the cost to the time or effort needed to retrieve a possible activity associated with the NP complement'. Instead, they propose that the cost should be attributed to process (D): '[incorporation of] the event sense into the semantic interpretation of the VP by reconfiguring the semantic representation of the complement' (Traxler et al. 2005, p. 4), which is the core element of the lexico-semantic position. In addition to this empirical evidence in favour of their theory, Traxler et al. (2005, p. 18) state that 'a primary reason for assuming lexical representations of the sort proposed by Pustejovsky (1995) is that they account for the default interpretations of otherwise underspecified expressions'. There are two issues with this claim. Firstly, the sentences that appear in Traxler et al. (2005) have first been subjected to a fill-in-the-blank norming process. Participants were asked to fill in the blank for sentences such as 'The author began ____ the book', presented in isolation. The most frequent response to this task was taken and introduced in the context sentences in Traxler et al.'s (2005) experiments. Other complement coercion structures that are more ambiguous, or harder to interpret without a supporting context, were not featured in their study. It is possible that if structures with a greater degree of ambiguity were featured, there would be a greater effect of context on reading times, and Traxler et al. (2005, p. 18) themselves note that 'there may be expressions requiring coercion in which the recovery of a suitable action does have measurable consequences, perhaps because it may require a relatively slow inferential process'.

Secondly, even after this norming process, Traxler et al. (2005, p. 6) report that in their acceptability norming pre-test, participants only identified the 'correct' interpretation of complement coercion structures 67% of the time on average. Far from supporting the notion of default interpretations of complement coercion structures, this agreement rate suggests that in many cases, participants generate different interpretations of structures even when they have been designed to make one specific interpretation likely. Moreover, empirical studies to date have only investigated how long it takes participants to finish reading complement coercion structures, but have not examined whether participants tend to find them acceptable or not. If isolated complement coercion structures show a high rejection rate relative to straightforwardly compositional control sentences, then this is evidence against the notion that complement coercion structures have default interpretations and suggests a flaw in the lexico-semantic account. This issue is investigated in the experiment reported below.

3 The syntactico-pragmatic account

Other researchers have claimed that pragmatic processing must take place in order for complement coercion structures to be interpreted. De Almeida (2004) and de Almeida and Dwivedi (2008) argue against the lexico-semantic account of complement coercion discussed

above in three ways. First, de Almeida (2004) reports an experiment that does not replicate McElree et al.'s (2001) finding. Second, de Almeida (2004) and de Almeida and Dwivedi (2008) disagree with the lexico-semantic theorists over how some of their psycholinguistic data should be interpreted. Third, de Almeida and Dwivedi (2008) advance a theoretical argument against the lexico-semantic theory that denies that anything like complement coercion actually takes place when sentences such as (1b) or (2a) are interpreted. These arguments will now be examined in turn.

3.1 Psycholinguistic research on complement coercion from the syntactico-pragmatic perspective

De Almeida (2004) reports a self-paced reading experiment in two parts that does not replicate McElree et al.'s (2001) finding that complement coercion structures take longer to process than control structures. As before, the experimental stimuli consisted of sentence triads that contained either a coercing structure, a preferred structure, or a non-preferred structure. De Almeida (2004, p. 255) finds no significant effect of sentence type on reading times in the critical positions in the stimuli sentences. De Almeida (2004, p. 256) argues that his data and 'some of Traxler et al.'s [2002] results… suggest that type-shifting verbs are not more complex – or do not engender more complex semantic processing – than other verb types'. However, de Almeida's interpretation of Traxler, Pickering and McElree's (2002) experiment 1 results is dubious. Traxler et al. (2002, p. 536) report an eye tracking experiment that recorded a participant's gaze as they read sentences that contained a complement coercion structure, a preferred verb or a non-preferred verb, and report the following measures: first-pass time, first-pass regressions, second-pass time, total time and regression-path time. De Almeida (2004, p. 256) states: 'In the eye-tracking study reported by Traxler et al.… type-shifting effects were only marginally significant and even non-significant, in some cases, such as in first-pass reading times' and takes this as strong evidence against the psycholinguistic reality of complement coercion. However, he ignores the other measures on which there was a significant difference between complement coercion sentences and preferred/non-preferred sentences such as second-pass time, which is a measure of how much time a reader spent re-reading a word after an initial fixation. Indeed, the pattern of results reported in Traxler et al. (2002) seems to indicate that although readers do not immediately encounter increased difficulty with complement coercion structures (based on no significant difference on the first-pass time measure), subsequently readers do have to revert back to critical areas (based on a significant difference on second-pass time in all areas and significantly more first-pass regressions from the complement to the verb in complement coercion structures). Contrary to de Almeida's (2004) interpretation, these findings are consistent with the claim that complement coercion structures are more costly to process than control structures. Furthermore, in a direct response to de Almeida (2004), Pickering, McElree, and Traxler (2005) report an additional eye-tracking experiment that featured de Almeida's (2004) stimuli and do find evidence of increased processing difficulty for complement coercion structures. They argue that, given that a coercion effect has been demonstrated repeatedly across multiple experiments in McElree et al. (2001), Traxler et al. (2002) and Pickering et al. (2005), and that it is possible to interpret some of de Almeida's own data as supporting a coercion effect, the null results that de Almeida (2004) reports are probably due to Type II Error caused by a relatively small number of experimental items.

3.2 A theoretical critique of the syntactico-pragmatic account

The theoretical element of the syntactico-pragmatic account will now be examined. De Almeida and Dwivedi (2008, p. 302) make a central claim that they argue is incompatible with the lexico-semantic account: 'the basis for the interpretation of indeterminate linguistic structures is inferential or pragmatic in nature', and they include complement coercion in the category of 'indeterminate structures'. This claim is incompatible with the lexico-semantic account because the lexico-semantic account holds that the basis for interpreting these structures is not pragmatic, but lexical: interpretation is based on lexical information at the word level, and the effect of context is relatively limited. Traxler et al. (2005, p. 20) state that 'context can ameliorate the cost associated with coercion', but only if 'it contains a relevant event sense. In this way, a discourse representation appears to serve as an extended lexicon'. The 'discourse representations' in their experiments are lexically realised verb phrases. Traxler et al. claim that contextual information does not help participants infer the meaning of complement coercion structures. Instead, the full event sense, containing the relevant verb and its complement must be lexically realised in discourse prior to the ambiguous structure in order for processing to be facilitated.

De Almeida and Dwivedi (2008) propose a new analysis of complement coercion structures based on the existence of covert syntactic structure. Sentence (3a) reproduces their formalisation of this analysis. Sentence (3b) contains a construction without the proposed syntactic modifications for comparison purposes.

(3)   a.   The secretary began [VP [V0 e] [NP the memo]]
      b.   The secretary [VP wrote [NP the memo]]

De Almeida and Dwivedi (2008, p. 313) argue that instead of arising from the application of a complex operation on highly structured lexical representations, it is 'the extra VP structure in [3a which] accounts for the extra time taken in some experiments to process such sentences'. The difference between sentence (3a) and sentence (3b) is that sentence (3a) contains an extra VP node that itself contains an empty verb head 'V0 e'. The content of this empty verb head is the specific action undertaken by the agent of the coercing verb (*began*), and is pragmatically inferred from the discourse context and other elements of the sentence. De Almeida and Dwivedi (2008) seem to claim that the process of pragmatic inference that supplies the content of the empty verb head does not prompt a measurable increase in processing time, and that it is the processing of additional syntactic structure alone that explains any such increase. On this account the process of pragmatic inference is 'free' in the sense that it leaves no psycholinguistic footprint. Putting aside initial doubts as to how it would be possible for such a process to happen instantaneously and at no cost, at a later stage in their argument this position is confused by another element of their account. De Almeida and Dwivedi (2008, p. 321) argue that verbs that can appear in complement coercion structures come with certain entailments that may give rise to indeterminacy. For example, usage of an aspectual verb such as *finish* presupposes that there was a beginning to the event that *finish* is to be applied to. Now consider sentence (4), which contains a complement coercion structure:

(4)   John enjoyed the book.

De Almeida and Dwivedi (2008, p. 321) propose that 'the indeterminacy of [4] can be characterised as presupposing a relation between an activity and two NP referents... for someone to utter [4], a relation z (the verb-referring event) between x and y needs to be determined such that *x enjoyed z-ing y*'. They call the content of this relationship *z-information*

and equate it with the content of the empty verb head that occupies the extra syntactic structure postulated in their account. They claim that McElree et al. (2001) detected increased reading times for complement coercion structures because in their experimental stimuli:

> "a filler for the empty V is not supplied overtly and because the presuppositional context does not supply a potential filler either. Our suggestion is, then, that increased reading times at post-verbal positions obtained in some of the experiments discussed above could be due to the lack of specification of the z relation."
>
> (De Almeida & Dwivedi, 2008, p. 322)

In the McElree et al. (2001) experiment, participants encountered complement coercion structures with no supporting context. De Almeida and Dwivedi (2008) argue that participants may have experienced difficulty processing such sentences simply because not enough information was present in either the sentence itself or the discourse context in order for them to derive a full interpretation. However if it is possible for z-information to reduce the processing time of complement coercion structures, where does this leave de Almeida and Dwivedi's (2008, p. 131) earlier claim that it is the extra VP structure in complement coercion that accounts for their extra processing time? It might be argued that de Almeida and Dwivedi include the process of pragmatically inferring the content of the empty verb head under the umbrella of processing 'extra VP structure', but they give the impression that this is not what they intend:

> By claiming that extra structure accounts for extra processing time, we rely on old yet standard assumptions about sentence processing (Frazier and Fodor 1978): structural computations correlate with processing time.
>
> (De Almeida & Dwivedi, 2008, p. 313)

It is difficult to see how a pragmatic inference could be considered a 'structural computation'. On the one hand, de Almeida and Dwivedi (2008) claim that processing extra syntactic structure is the reason for increased comprehension time in complement coercion structures, but on the other hand, that information present at the discourse level required to fill an empty verb head can reduce this processing time. It is not clear whether they are arguing that increased processing time is due to the fact that an extra syntactic node is present, or whether it is due to the fact that the content of this node must be pragmatically specified. De Almeida and Dwivedi (2008) also introduce Frazier and Fodor's (1978) model as an example of what constitutes a 'structural computation'. This 'sausage machine' model is completely syntactic in nature and does not make any claims about how pragmatic information is processed. This further suggests that they do not mean to label a pragmatic process as part of a structural computation.

     Ultimately, it is not clear how de Almeida and Dwivedi (2008) intend the syntactic and pragmatic elements of their account to interact, and as a result it is also not clear what psycholinguistic data would support their argument. However, suppose that de Almeida and Dwivedi (2008) commit to the claim that salient z-information-bearing content can reduce the processing times of complement coercion structures. De Almeida and Dwivedi's (2008) theory still faces a serious problem. They claim that the presence of a likely antecedent for the content of the empty verb head can speed up the processing of the extra syntactic structure. Recall the experiment reported in Traxler et al. (2005), discussed above. In this experiment, Traxler et al. investigated the effect of context on the processing of complement coercion structures and found that the presence of a likely antecedent for the content of the empty verb head did *not* have a measurable effect on processing time unless that antecedent was a fully realised

instantiation of the event sense of the complement coercion structure, which is inconsistent with de Almeida and Dwivedi's (2008) account.

4 Katsika et al. (2012) and a confound in studies of complement coercion

 At first glance, Traxler et al.'s (2005) evidence provides a knock-down argument against de Almeida and Dwivedi's (2008) position. However, a recent experiment reported by Katsika et al. (2012) demonstrate convincingly that all previous psycholinguistic studies of complement coercion have overlooked a serious confound in their experiment materials that may have masked any effect of the presence of z-information in context on processing times of complement coercion structures. A full half of the stimuli used in Traxler et al.'s (2005) experiment 1 suffer from this confound. Katsika et al. (2012) argue that the set of verbs used in psycholinguistic experiments on complement coercion consists of at least two main verb subsets. The first such subset contains the aspectual verbs, such as *begin, finish, start,* and *continue.* The second subset contains verbs that Katsika et al. (2012) call 'psychological' verbs, such as *enjoy, resist, savour,* and *endure.* They show that aspectual predicates such as *begin* and *finish* do trigger a process of complement coercion when combined with an entity-denoting complement, and exhibit the accompanying increased processing difficulty. However, the psychological verbs do not. This is because although it is possible for the complement of a psychological verb to be event-denoting, this is not actually a selectional *requirement* of psychological verbs: although it is not possible to simply 'begin a book', it *is* possible to simply 'enjoy a book'. This finding has implications for the interpretation of Traxler et al.'s (2005) data on the effects of context on complement coercion processing. Half of the verbs featured in experiment 1 were psychological verbs that do not necessarily trigger a process of complement coercion when paired with an entity-denoting noun. De Almeida and Dwivedi could rightly argue that it would not be expected for z-information-specification to have any effect on the processing of psychological verbs because in actual fact these verb-complement combinations do not feature additional syntactic structure in the first place. A new study of comprehension-to-comprehension priming in complement coercion will now be reported. This study was designed to investigate the issues facing both the lexico-semantic theory and the syntactico-pragmatic theory, and features stimuli that do not suffer from the confound discovered by Katsika et al. (2012).

5 Experiment report

This experiment investigated the effect of different relationships between prime and target sentences on the time taken to comprehend the target sentences, where the target sentences all contained complement coercion structures that featured aspectual verbs. Participants were presented with a prime sentence, then a target sentence, and asked to determine whether there were any errors in *either* the prime or the target. Primes and targets were separated by a fixation cross. The time in between the onset of the target sentence and a participant's response was taken as a measure of how long it took that participant to process the target sentence. An example critical stimulus set is given in Table 1 below:

Table 1 - Example critical item set

Condition		Prime sentences	Target sentence
(i)	baseline	The man bought the newspaper.	The girl began the book.
(ii)	explicit action	The man was reading the newspaper.	The girl began the book.
(iii)	different coerced	The man finished the sandwich.	The girl began the book.
(iv)	same coerced	The man began the newspaper.	The girl began the book.

The properties of each experimental condition and how these properties bear on tests of both the lexico-semantic theory and the syntactico-pragmatic theory will now be outlined. In pair (i), the prime sentence features no complement coercion but the target sentence does feature complement coercion. This pair provides a measure of how long it takes to process a complement coercion structure in an environment that should have no effect on this processing time either way. In pair (ii), the action that is implicit in the target complement coercion sentence is explicitly introduced in the prime sentence. This pair is designed to test de Almeida and Dwivedi's (2008) claim that z-information specification should speed up complement coercion processing times. Because the activity that is implicit in the target sentence has just been introduced in the preceding prime, de Almeida and Dwivedi's (2008) prediction would be that reaction times to pair (ii) should be faster than reaction times to pair (i). Note that the prime sentences in pair (ii) do not contain the full event sense required in the interpretation of the complement coercion structure in the accompanying target sentence: the arguments of the verb are not repeated. In pair (iii), the only thing that is held constant across prime and target is the presence of complement coercion. No semantic element from the prime is repeated in the target. This pair is designed to test whether the act of coercing a complement primes another act of complement coercion. Neither theory offers a prediction about whether the process of complement coercion alone should prime a subsequent complement coercion process, and this effect has not been investigated in previous studies. In pair (iv), both prime and target sentences contain complement coercion, and the coercing structure is repeated across sentences. However, the arguments of the verb are not repeated. Traxler et al. (2005) report that complement coercion structures that contain the same verb and require the recovery of the same implicit event exhibit priming. A comparison of pair (iv) reaction times to pair (i) reaction times therefore tests whether this finding is replicable with a different methodology.

It is also possible to compare the acceptance rates of pair (ii) to the other conditions in order to investigate the extent to which complement coercion structures have default interpretations. If complement coercion structures have default interpretations as Traxler et al. (2005) maintain, then there should be no difference between the acceptance rates across critical conditions because participants should simply make use of the default interpretation in all cases. However if, as de Almeida and Dwivedi (2008, p. 322) suggest, isolated complement coercion structures are generally difficult to interpret and do not have default interpretations, then pair (ii) should show higher acceptance rates compared to the baseline condition. This is because in pair (ii), the prime sentence explicitly introduces the action that is left implicit in the target sentence, and participants should be able to make use of this information in order to

help them generate a complete interpretation of the target sentence. In the baseline condition, the prime sentence does not contain any information that could aid in the generation of an interpretation of the target sentence, and so acceptance rates should be lower if no default interpretation is available in some cases.

5.1 Methodology

Participants

32 adult monolingual native speakers of British English drawn from the University College London SONA subject pool with reported normal or corrected-to-normal vision participated in the study. Mean age = 29 (SD = 9.5, range =20-53), 11 males. Subjects gave informed consent and were paid £6 for their participation. In order to maximise the efficiency of data collection, the experiment reported below was run in a block with a separate, unconnected experiment. The order in which the experiments were presented was counterbalanced in order to minimise any potential ordering effects.

Procedure

Participants saw a prime sentence for 3 seconds, and then a fixation cross for 2 seconds. Then participants saw a target sentence. Participants were asked to judge as quickly as possible whether *either* the prime or target sentence contained a violation and respond via a button press. A violation could either be grammatical or semantic. Examples of all types of violation are given in the Materials section below. There were two dependent variables: the time in between the onset of the target sentence and the participant's response, and the rate of acceptance of target sentences. The experimental manipulation was the relationship between the prime and the target in terms of content. The time taken for a participant to respond is taken to be an index of how long it took the participant to fully comprehend the second sentence of the pair. In the critical trials, there were no errors in either prime or target, so the time taken to respond in these trials would not be affected by any error detection or resolution processes. The fact that participants were asked to detect errors in either the prime or the target ensured that participants fully comprehended both sentences. Participants were given a practice session lasting ten trials in order to familiarise them with the task. No data were gathered from the practice trials, and no verbs or nouns used in the practice trials appeared in the main experiment. Every type of error that appeared in the main experiment also appeared in the practice trials, and errors appeared in both prime and target sentences within filler trials. During the practice trials participants were given feedback after each judgement indicating whether they had responded correctly or incorrectly in order to maximise their understanding of the task requirements and to make sure they understood what constituted an error. During the main experiment, participants did not receive feedback. The experiment lasted approximately 15 minutes.

Materials

Sixteen critical target sentences containing a complement coercion structure were generated. These sentences were all of the form [the X verbed the Y] in the simple past tense, and featured an animate agentive subject performing an action on a theme or patient object. For each of these 16 target sentences, four prime sentences were generated. Participants were divided into four groups, and these 64 sentence pairs were divided into four lists such that each participant

only saw any sentence once. A single participant therefore experienced one experimental condition per target sentence and contributed four times to each condition.

Forty filler sentence pairs were generated. These filler sentences also all featured an animate agent performing an action on a patient or theme. The tense and voice of these filler sentences was variable. Twenty eight of the filler items (half of the total trials in a run) contained either a syntactic or semantic violation in either the prime or target sentence. A syntactic violation consisted of a verb subject agreement error or an incorrectly conjugated tense. A semantic violation consisted of an animacy violation in either the subject or object noun phrase head. Care was taken to ensure that violations appeared approximately equally in sentence initial, medial and final positions in order to ensure that participants were motivated to read and fully comprehend the entirety of every sentence. An example of each type of violation is given in Table 2 below:

Table 2 - Examples of filler violations

Violation	Example
Semantic animacy	The dress was ripped by the faith.
Grammatical tense	The policeman will finding the gun.
Grammatical agreement	The butler burn the toast.

A complete list of all the sentence pairs used in the experiment can be found in the Appendix.

5.2 Results

Reaction time data

All critical trials with reaction times above 3500ms were removed on the grounds that these responses were long enough that they were unlikely to reflect automatic sentence processing. Three participants were excluded from reaction time analysis because after removing all trials which were responded to incorrectly, all of the trials from one critical condition were lost. Because the raw reaction time scores were not normally distributed, and parametric statistical tests require normally distributed data, the natural logarithm of all data points was computed and statistical analyses were performed on this transformed dataset (Shapiro-Wilks test on all 4 critical conditions after transformation, all p-values >0.05). Data were analysed by condition and all critical trial data points fell within 2.5 standard deviations of the condition mean, therefore no outliers were removed. It may have been preferable to remove outliers by participant instead of by condition in order to account for variability in natural reading speeds. However, outliers were removed in this way instead of by participant because since a participant only contributed to a condition four times it is unlikely that four data points would provide an accurate measure of what constituted an outlier.

The reaction time data were subjected to a repeated measures one-way ANOVA with independent variable Prime Type (baseline vs same coerced vs different coerced vs explicit action) and dependent variable natural log reaction time. Table 3 below displays the mean natural log reaction times (with standard deviations in parentheses) of each critical condition.

Table 3 - Mean natural log reaction times by condition

Baseline (pair i)	Explicit action (pair ii)	Different Coerced (pair iii)	Same Coerced (pair iv)
7.478 (0.287)	7.408 (0.3)	7.408 (0.3004)	7.374 (0.3)

 The ANOVA test revealed no main effect of Prime Type (F (1, 28) = 0.354, p = 0.557, partial eta squared = 0.12). Given that Traxler et al. (2005) found evidence that repeating a coercing structure sped up processing time, and that this result is not replicated here, the likely interpretation of this result is that the methodology employed in this study is simply not sensitive to these effects.

Acceptance rate data

 In the reaction time data analysis, 26% of critical trials were removed because they were judged to contain violations. Recall that de Almeida and Dwivedi (2008) argue that in isolation, a complement coercion structure is underspecified in that a full interpretation is difficult to generate with the information at hand. It is possible that participants were not necessarily judging complement coercion structures as constituting an error, but rather they simply rejected these structures because a full interpretation was difficult or impossible to generate. A Pearson's Chi-Square test was performed in order to determine whether participants were more likely to accept pairs of sentences from one condition over pairs from other conditions. There was a significant difference between prime types in the proportion of trials accepted and rejected (Chi-Square = 33.188, df = 3, p < 0.0001, Cramer's V = 0.255, p < 0.001). Subsequent 2x2 table Chi-Square tests were conducted comparing the baseline condition directly to the other three conditions in order to further investigate this effect. Tables 4-6 below display the counts, expected counts and standardised residuals of each pairwise comparison along with the relevant critical statistics.

Table 4 – Chi-Square Test: Baseline vs Same Coerced

Chi-Square = 9.111, p = 0.004, Cramer's V=0.189, p = 0.003, df=1		Baseline	Same coerced
Accepted	Count	95	72
	Expected count	83.5	83.5
	Standardised residual	1.3	-1.3
Rejected	Count	33	56
	Expected count	44.5	44.5
	Standardised residual	-1.7	1.7

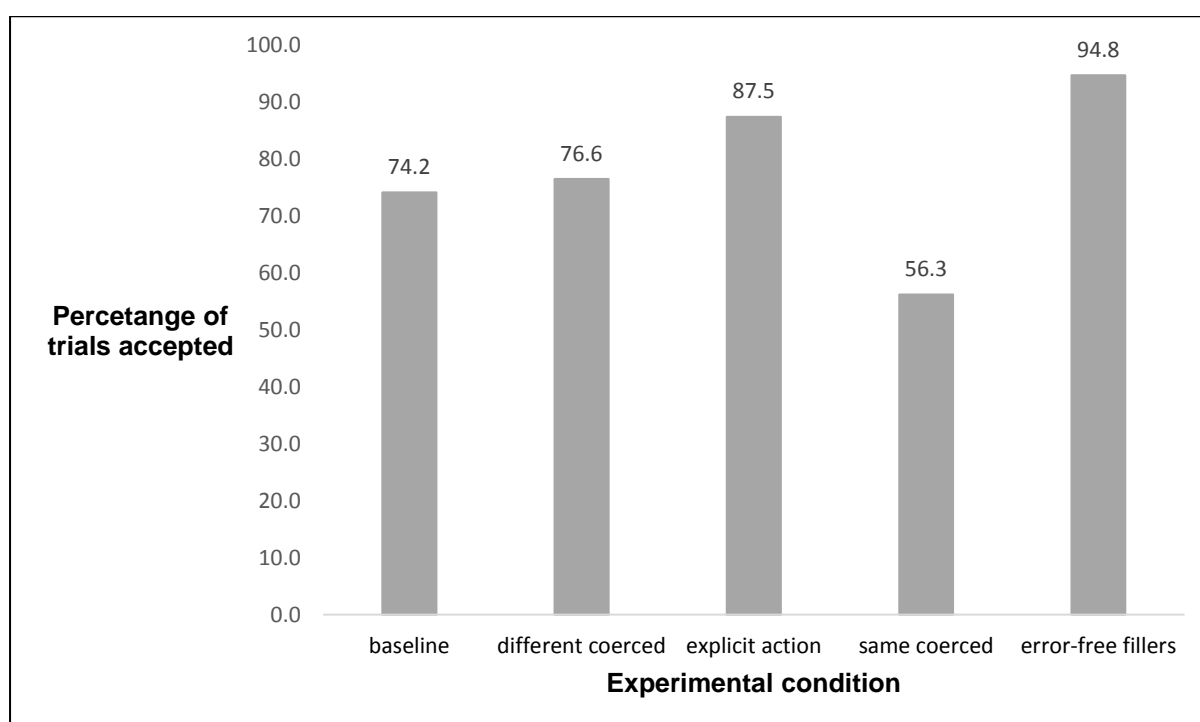**Table 5 – Chi-Square Test: Baseline vs Different Coerced**

Chi-Square = 0.189, p=0.772, Cramer's V=0.027, p = 0.663, df=1		Baseline	Different Coerced
Accepted	Count	95	98
	Expected count	96.5	96.5
	Standardised residual	-0.2	0.2
Rejected	Count	33	30
	Expected count	31.5	31.5
	Standardised residual	0.3	-0.3

Table 6 – Chi-Squared Test: Baseline vs Explicit Action

Chi-Square = 7.294, p = 0.011, Cramer's V=0.169, p = 0.007, df=1		Baseline	Explicit Action
Accepted	Count	95	112
	Expected count	103.5	103.5
	Standardised residual	-0.8	0.8
Rejected	Count	33	16
	Expected count	24.5	24.5
	Standardised residual	1.7	-1.7

Figure 1 below displays the acceptance rates of trials by condition as percentages of the total number of trials in each condition.

Figure 1 - Acceptance rates of error-free trials

An examination of the relevant statistics in each comparison shows that the Baseline and Different Coerced conditions did not significantly differ in terms of acceptance rates (Chi-Square = 0.189, p = 0.772, Cramer's V = 0.027, df = 1). However, both the Same Coerced condition and the Explicit Action condition did significantly differ from the Baseline condition (Same Coerced: Chi-Square = 9.111, p = 0.004, Cramer's V=0.189, df = 1, Explicit Action: Chi-Square = 7.294, p = 0.011, Cramer's V = 0.169, df =1). An examination of the counts and expected counts reveals the reason for these effects. Participants were significantly more likely to reject pairs of sentences from the Same Coerced condition than from the Baseline condition. Participants were also significantly *less* likely to reject pairs of sentences from the Explicit Action condition. Therefore, although the nature of the relationship between prime and target sentences did not have an effect on reaction times, there was an effect on how acceptable participants found complement coercion structures.

5.3 Discussion

The reaction time data do not provide support for de Almeida and Dwivedi's (2008) claim that z-information specification should speed up the processing times of subsequent complement coercion structures because reaction times to the Baseline condition did not differ from the reaction times to the Explicit Action condition. However, because no significant effect of prime-target relationship on processing times was found in any condition, the likely explanation is that the methodology employed is not sensitive to reaction time priming effects and therefore it is not safe to draw any conclusions regarding this point. An improvement to the experiment reported here would be to make use of eye-tracking data because this is the most frequently deployed methodology in psycholinguistic research on complement coercion. This would make the results from a study that did not control for the confound identified by Katsika et al. (2012) and the results from a study that did control for this confound would be maximally comparable.

However, an examination of the acceptance rate data provides a novel finding. Previous research has not provided a measure of how context affects whether participants accept a complement coercion structure as grammatical, but only on how fast it takes participants to read a complement coercion structure. Recall that 26% of the critical trials (those trials that contained complement coercion structures) employed in this study were classed as containing violations. Participants were told to reject stimuli if they contained either a semantic or grammatical error. None of the critical trials contained such an error. One possibility is that participants generated a full interpretation of those critical trial pairs that they identified as containing no errors, and rejected those pairs for which a complement coercion structure was not fully interpreted. In the Explicit Action condition, it seems plausible that encountering a potential action in the prime sentence with which to interpret a subsequent underspecified complement coercion target sentence is the reason that participants were more likely to judge a complement coercion structure to be error free. Considering the reaction time data and the acceptance rate data together, these results suggest that although explicitly introducing the action that is left implicit in a complement coercion structure might not speed up processing time, it does aid the process of generating an interpretation. The acceptance data for the Same Coerced condition are more problematic to interpret. Raffray, Pickering, Cai, and Branigan (2013) show that identical coercing expressions show priming from comprehension to production, and Traxler et al. (2005) show that repeating a coercing structure speeds up processing time. Therefore it is somewhat mysterious that repeating a coercing structure across prime and target in the current experiment makes it *less* likely for a target sentence to be accepted. One potential explanation is that because complement coercion structures are difficult to process relative to traditionally compositional structures, participants simply had problems parsing two such structures one after the other in a short space of time while responding to the requirements of the task. However if this were the reason for increased rejection rates, it would be expected that the Different Coerced condition would also show this effect, but the Different Coerced condition did not differ significantly from the Baseline condition. Given its non-intuitiveness, it would be prudent to replicate this finding before committing to any explanation of it. However, these data suggest that, contrary to Traxler et al.'s (2005) claim that complement coercion structures generally have default interpretations, it is relatively difficult to generate a full interpretation of an isolated complement coercion structure.

There are two potential criticisms of the experiment reported here that need to be addressed. Firstly, it is reasonable for de Almeida and Dwivedi to claim that z-information specification requires a richer discursive context than that found in the relationship between disconnected prime and target sentences. Therefore, the fact that the Explicit Action condition

did not show priming relative to the Baseline condition is not necessarily evidence against their theory. This may be true, but it is still clear that compared to other conditions, the Explicit Action condition showed a higher acceptance rate of complement coercion structures and that the most likely reason for this is that the implicit action is specified, allowing for an easier interpretation. Although de Almeida and Dwivedi (2008) do not specifically predict this pattern, it is compatible with their view that the resolution of underspecification accounts for at least some of the difficulty in processing complement coercion structures. However, as argued above, their theory is difficult to apply because it is just not clear how they propose that the syntactic and pragmatic elements of the account interact. Secondly, the number of critical trials in the study was relatively small (n=16). Given that Katsika et al. (2012) provide a strong motivation for reducing the size of the class of complement coercers to a handful of semantically related aspectual verbs, this small stimulus set is unavoidable without requiring a large number of verb repetitions across the experiment, which would be potentially problematic because unwanted repetition priming effects would be likely to appear. This issue is therefore unavoidable with the methodology employed here, and is a weakness of the study.

De Almeida and Dwivedi's (2008) syntactico-pragmatic theory has been discounted on the grounds that it is not consistent. It is unclear whether they intend for purely syntactic processing to account for extra comprehension costs, or whether pragmatic inferences also result incur comprehension costs. However, a strength of de Almeida and Dwivedi's (2008) account is that it allows for the effects of pragmatic processing on ambiguous structures. The implications of the results reported here for the lexico-semantic theory will now be discussed, and it will be argued that the lexico-semantic theory is lacking a vital pragmatic component. McElree et al. (2001) allow that specific linguistic elements of the discourse context, such as the subject of the verb, can have an effect on how complement coercion structures are interpreted. Traxler et al. (2005, Experiments 3 & 4) show that within a contained narrative, introducing the entire event sense of a fully interpreted complement coercion structure in a context sentence speeds up the processing of a subsequent complement coercion structure in a target sentence. The acceptance rate data reported here show that in relatively artificial, non-narrative contexts, a prime sentence that contains a likely candidate for the implicit action in a target complement coercion structure is enough to aid interpretation even when there is no overt discursive connection between prime and target.

Traxler et al. (2005, p. 18) argue that their results show that 'it is highly unlikely that [the type of ambiguity that features in complement coercion structures] is the source of the observed cost in processing these expressions'. However, despite the fact that their account is confused, de Almeida and Dwivedi (2008) are right to claim that the underspecification seen in complement coercion structures is resolved pragmatically at least some of the time. On the other hand, and contra to de Almeida and Dwivedi's (2008) position, it is highly likely that this pragmatic resolution comes at a cost. It is still uncertain whether Traxler et al.'s (2005) eye-tracking data are valid because it is possible that an eye-tracking paradigm or a self-paced reading paradigm that controlled for Katsika et al.'s (2012) confound would show a greater effect of context on processing times. There are also two arguments against Traxler et al.'s (2005) claim that complement coercion structure ambiguity is resolved on a purely lexical basis, one of which is empirical and one of which is theoretical. Traxler et al. (2005) maintain that it is a strength of their account that it explains how complement coercion structures have default interpretations. However, it is not clear that many of these expressions do prompt 'default' interpretations. In their experiments, Traxler et al. (2005) placed pre-normed complement coercion structures in contexts that were relatively rich in content. In the experiment reported in the current paper, nearly a full quarter of trials containing complement coercion structures were rejected, presumably at least partly because the context in which they appeared did not allow a default interpretation. If a default interpretation was available then

'correct' acceptances of Same Coerced trials should have been as high as in the filler trials. However, 94.8% of filler trials that contained no errors and no underspecification were correctly accepted compared to just 56.3% of the Same Coerced trials. By comparison, in the Explicit Action condition, where the prime presumably aided the resolution of the ambiguity present in the target, the acceptance rate was 87.5%. It is also important to stress that the prime sentences in the Explicit Action condition do not contain fully lexicalised instantiations of the complement coercion structure present in the target sentences, as was the case in the Traxler et al. (2005) experiments. The coercing verb is not featured in the prime sentence and the arguments of the verb are not repeated across prime and target either. Although Traxler et al. (2005) may well be right to argue that the effect of context on complement coercion structures is limited in some cases, the evidence presented here suggests that this effect is still slightly larger than they allow.

Additionally, there is an explanatory gap in the lexico-semantic account regarding how the interpretation of an underspecified complement coercion structure is generated. The only way of filling this gap is to accept that pragmatic processing plays a role. Suppose that some complement coercion structures do have a default interpretation, or set of default interpretations, and that these default interpretations are a function of information resembling Pustejovsky's qualia structure. In the case of relatively transparent complement coercion structures, such as *The author began the book,* this seems plausible. However, there are still questions that this explanation leaves unanswered: What makes it possible for a decision to be made regarding whether the default interpretation is the one a speaker intended to convey? When a default interpretation is incorrect, on what basis does a hearer make this decision and how is the correct interpretation generated? And finally, it is trivial to construct cases where there is obviously no default interpretation of a complement coercion structure, but in which context resolves the ambiguity. For example, consider the following narrative:

> "The little girl took out her toy construction set and methodically laid out all the pieces according to their size and colour. After reading the instructions carefully, she began the railway. A few hours later, her mother called her for tea."

In comparison to cases such as 'began the book', it is much less plausible to suggest that the verb phrase 'began the railway' has a default interpretation that can be derived from the qualia structure of the noun 'railway', or the qualia structure of the noun 'girl', which the pronoun 'she' refers to in the extract above. The fact that the little girl in this story is understood to be building a toy railway has nothing to do with the lexical representations of the words 'began' or 'railway', and little girls are not by default associated with the act of railway building. Instead, it is clear that this interpretation is derived from the wider context in which the complement coercion structure appears, and the reader is able to make use of world knowledge about what toy construction sets typically contain and what a little girl might do with one, as well as the intentions of the writer/speaker in communicating the narrative in the first place. As Recanati (2004, p. 93) explains:

> [the semantic value of semantically underdeterminate expressions] varies from occurrence to occurrence… yet it varies not as a function of some objective feature of the narrow context but as a function of what the speaker means… the semantic value of the expression – its own contribution to what is said – is a matter of speaker's meaning, and can only be determined by pragmatic interpretation.

Traxler et al. (2005, p. 18) claim that 'enriched composition is costly because readers must... [incorporate the action that is left implicit] into the semantic representation of the VP', but in

many cases this explanation leaves out how it is that comprehenders decide what the implicit action is in the first place. Even in relatively transparent cases such as *The author began the book,* where something like Pustejovsky's nominal qualia structure and telic/agentive roles might plausibly provide the information with which to build the event sense 'began writing the book', a comprehender still has to somehow decide which role is appropriate. In order to do this, a comprehender has to make assumptions about what a speaker intended to mean based on context. Making use of this knowledge is unlikely to be cost-free, and the mental representations involved must be formed at least partly of information that cannot be found at the lexical level. In and of itself, the content of the lexical representations of the words *author, book,* and *began* is not sufficient to determine what a speaker intended an utterance of 'The author began the book' to mean.

6 Conclusion

This paper explored two theories of the interpretation of complement coercion structures: the lexico-semantic theory and the syntactico-pragmatic theory. The psycholinguistic literature demonstrates that structures such as 'the girl began the book' engender additional processing costs relative to control structures. The syntactico-pragmatic theory holds that this additional cost is due either to the presence of extra syntactic structure or the pragmatically driven assignment of a value to an empty verb head contained in the extra syntactic structure. However, this account is inconsistent in describing which of these elements engenders the cost, or if both do. The lexico-semantic theory provides an account of complement coercion that is consistent, but incomplete without the allowance that pragmatic inferences are necessary for the interpretation of underspecified complement coercion structures and that these inferences probably do come at a processing cost. The experiment reported here controlled for a confound that renders the findings of previous studies of complement coercion open to question. Although this experiment returned a null result regarding the effect of prime sentences on the time taken to process target complement coercion structures, the acceptance rate data do show an effect. Introducing a likely action with which to complete the interpretation of a complement coercion structure made participants more likely to accept that complement coercion structure as error-free, which is most likely because they were able to generate a full interpretation. This is in contrast to Traxler et al.'s (2005) claims that complement coercion structures have default interpretations and that increased cost is solely due to operations on lexical representations. A subsequent study that employed an eye-tracking paradigm and also controlled for the confound present in previous studies would provide data that was maximally comparable to Traxler et al.'s (2005) results and would clarify the effect of context on the processing of complement coercion structures.

Appendix

Critical Stimuli

Baseline stimuli

List	Prime	Target
1	The mother lost the card.	The professor finished the letter.
1	The labourer used the sink.	The mechanic finished the car.
1	The pensioner refused the painkiller.	The patient finished the drug.
1	The jeweller examined the stone.	The sculptor continued the statue.
2	The artist dropped the portrait.	The student started the picture.
2	The boy heard the song.	The pianist started the sonata.
2	The soldier destroyed the bridge.	The farmhand completed the henhouse.
2	The worker drafted the blueprint.	The explorer completed the map.
3	The man bought the newspaper.	The girl began the book.
3	The grandmother served the pie.	The chef began the entrée.
3	The aunt washed the clothes.	The seamstress began the quilt.
3	The lecturer explained the problem.	The grandfather continued the crossword.
4	The producer admired the stage.	The architect continued the house.
4	The teenager spilt the juice.	The baby continued the milk.
4	The carpenter broke the table.	The goldsmith started the ring.
4	The medic saw the bullet.	The dentist began the tooth.

Explicit action stimuli

List	Prime	Target
1	The artist was drawing the portrait.	The student started the picture.
1	The boy was playing the song.	The pianist started the sonata.
1	The soldier was building the bridge.	The farmhand completed the henhouse.
1	The worker was sketching the blueprint.	The explorer completed the map.
2	The man was reading the newspaper.	The girl began the book.
2	The grandmother was cooking the pie.	The chef began the entrée.
2	The aunt was sewing the clothes.	.The seamstress began the quilt.
2	The lecturer was solving the problem.	The grandfather continued the crossword.
3	The producer was designing the stage.	The architect continued the house.
3	The teenager was drinking the juice.	The baby continued the milk.
3	The carpenter was making the table.	The goldsmith started the ring.
3	The medic was extracting the bullet.	The dentist began the tooth.
4	The mother was writing the card.	The professor finished the letter.
4	The labourer was fixing the sink.	The mechanic finished the car.
4	The pensioner was taking the painkiller.	The patient finished the drug.
4	The jeweller was carving the stone	The goldsmith started the ring.

Same coerced stimului

List	Prime	Target
1	The producer continued the stage.	The architect continued the house.
1	The teenager continued the juice.	The baby continued the milk.
1	The carpenter started the table.	The goldsmith started the ring.
1	The medic began the bullet.	The dentist began the tooth.
2	The mother finished the card.	The professor finished the letter.
2	The labourer began the sink.	The mechanic began the car.
2	The pensioner finished the painkiller.	The patient finished the drug.
2	The jeweller continued the stone.	The sculptor continued the statue.
3	The artist started the portrait.	The student started the picture.
3	The boy started the song.	The pianist started the sonata.
3	The soldier completed the bridge.	The farmhand completed the henhouse.
3	The worker completed the blueprint.	The explorer completed the map.
4	The man began the newspaper.	The girl began the book.
4	The grandmother began the pie.	The chef began the entrée.
4	The lecturer continued the problem.	The grandfather continued the crossword.
4	The aunt began the clothes.	The seamstress began the quilt.

Different coerced stimuli

List	Prime	Target
1	The man finished the sandwich.	The girl began the book.
1	The grandmother started the coffee.	The chef began the entrée.
1	The aunt started the plates.	The seamstress began the quilt.
1	The lecturer finished the diagram.	The grandfather continued the crossword.
2	The producer began the cigarette.	The architect continued the house.
2	The teenager finished the homework.	The baby continued the milk.
2	The carpenter continued the plans.	The goldsmith started the ring.
2	The medic continued the form.	The dentist began the tooth.
3	The mother completed the lawn.	The professor finished the letter.
3	The labourer completed the list.	The mechanic finished the car.
3	The pensioner began the report.	The patient finished the drug.
3	The jeweller began the inventory.	The sculptor continued the statue.
4	The artist completed the lake.	The student started the picture.
4	The boy continued the puzzle.	The pianist started the sonata.
4	The soldier began the mountain.	The farmhand completed the henhouse.
4	The worker finished the wall.	The explorer completed the map.

Filler Stimuli

Prime	Target	Violation
The fireman saved the pet.	The lifeguard will save the surfer.	no
The manager will file the reference.	The clerk filed the document	no
The breeder trains the dog.	The coach was training the athlete.	no
The gardener was planting the bush.	The climber plants the flag.	no
The janitor was sweeping the hall.	The runner will attempt the marathon.	no
The technician will install the machine.	The officer polishes the medal.	no
The plumber opens the valve.	The guard closes the door.	no
The schoolgirl was watching the sitcom.	The diver found the shipwreck.	no
The mayor awarded the prize.	The instructor will describe the course.	no
The zookeeper watches the lion.	The mugger threatened the victim.	no
The cowboy rode the horse.	The traveller will board the ship.	no
The fisherman caught the salmon.	The doctor will prescribe the treatment.	no
The criminal break the window.	The drunkard broke the vase.	prime, agreement
The musician play the saxophone.	The director pays the contractor.	prime, agreement
The fraudster were destroying the evidence.	The engineer detonates the bomb.	prime, agreement
The author were describing the story.	The crook will hide the weapon.	prime, agreement
The surgeon are installing the pacemaker.	The chemist performs the experiment.	prime, agreement
The politician was visiting the love.	The queen will visit the country.	prime, animacy
The girl patted the fear	The van was driven by the builder.	prime, animacy
The youth was mowing the luck.	The foreman planted the sign.	prime, animacy
The nurse tends the laughter.	The data was processed by the analyst.	prime, animacy
The truth will drive the convertible.	The spy escaped the patrol.	prime, animacy
The watch was sell by the auctioneer.	The gardener was tending the rosebush.	prime, tense
The child throwing the ball.	The word was learned by the baby.	prime, tense
The striker score the goal.	The nanny will pack the suitcase.	prime, tense
The inspector will imposed the fine.	The editor rejected the article.	prime, tense
The baker burnt the cake.	The butler burn the toast.	target, agreement
The mechanic scrapped the car.	The camper were stowing the tent.	target, agreement
The argument was refuted by the philosopher.	The gardener were tending the rosebush.	target, agreement
Prime	**Target**	**Violation**

The critic praises the film.	The postman deliver the parcel.	target, agreement
The barber trimmed the beard.	The pupil were learning the language.	target, agreement
The manuscript was ripped by the scribe.	The dress was ripped by the faith.	target, animacy
The president prepares the speech.	The anger cleans the cabin.	target, animacy
The man will lick the stamp.	The frown was watching the game.	target, animacy
The driver ignores the signal.	The teacher grades the camel.	target, animacy
The actress practised the script.	The pupil was practised the exercise.	target, tense
The employee will find the key.	The policeman will finding the gun.	target, tense
The tinker mended the clock.	The thug will steals the money	target, tense
The maid polishes the cabinet.	The uncle clearing the table.	target, tense
The poet composed the haiku.	The pilot has flying the plane.	target, tense

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