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The Influence of Focus Operators on Syntactic Processing of Short Relative Clause Sentences

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Ni, Crain, and Shankweiler (1996) present evidence to suggest that the focus operator *only* can guide how reduced relative clause sentences are initially parsed. In this paper, we demonstrate that this does not hold for relative clause sentences that start with a noun-phrase, verb, noun-phrase construction. We report an eye movement study in which subjects read reduced and unreduced sentences of this type with and without the focus operator *only*. There were longer first-pass reading times in the critical region of reduced sentences than in the same region of unreduced sentences, regardless of the inclusion of *only*. Furthermore, readers spent less time re-inspecting portions of text after being garden pathed when reading reduced relative clause sentences that contained the focus operator than when reading reduced relative clause sentences that did not. We conclude that subjects initially syntactically misanalysed reduced relative clause sentences with and without *only*, and the inclusion of a focus operator facilitated recovery procedures rather than guiding initial parsing. These results are inconsistent with the referential theory and undermine the conclusions of Ni et al. (1996).

How readers resolve syntactic ambiguities in natural language has been a major focus of psycholinguistic research. Of particular importance has been the question of how and when non-syntactic factors influence syntactic ambiguity resolution. In this paper, we examine when contextual information impacts upon decisions about the structure of syntactically ambiguous reduced relative clause sentences.

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Bever (1970) highlighted the ambiguity associated with reduced relative clause sentences such as (1).

(1) The horse raced past the barn fell.

This sentence is temporarily ambiguous between two syntactic analyses: a reduced relative clause reading and a simple active reading. In the reduced relative clause reading, the ambiguous phrase *raced past the barn* modifies the subject noun-phrase (NP) (*the horse*). The sentence in (1) is ultimately disambiguated in favour of the reduced relative clause reading by the verb *fell*. An unambiguous version of this sentence containing the phrase *which was* is given in (2).

(2) The horse which was raced past the barn fell.

Sentence (3) is a simple active sentence, which is almost identical to (1) except for the inclusion of the conjunct *and*. However, in (3) the verb *raced* does not modify the first NP, but instead it is the main verb of the sentence.

(3) The horse raced past the barn and fell.

We will consider whether focus operators can influence how temporarily ambiguous relative clause sentences are initially parsed. Focus operators are words like *only* and *even*, which focus the reader's attention on certain entities or sets of entities that may be instantiated in their mental representation of the text. Ni et al. (1996) suggest that the inclusion of a focus operator can influence initial decisions about the structure of ambiguous sentences. However, before discussing this possibility in detail, we will outline some theoretical accounts of sentence processing.

According to the garden path theory of language processing (Frazier, 1979; Frazier & Rayner, 1982, 1987; Rayner, Carlson, & Frazier, 1983; see also the more recent construal theory, Frazier & Clifton, 1996), the parser assigns an initial syntactic analysis according to the principles of late closure and minimal attachment. Late closure stipulates that, wherever possible, new text is incorporated into the current phrase marker. Minimal attachment stipulates that when two possible syntactic analyses can be assigned to an ambiguous fragment, the simpler (in terms of phrase structure) is initially adopted. As a relative clause analysis is more complex than a simple active analysis, minimal attachment predicts that the latter will be initially assigned to an ambiguous sentence like (1). Consequently, on encountering the disambiguating verb *fell*, readers experience sentence-processing difficulty due to their initial misanalysis. By monitoring eye movements during reading, Rayner et al. demonstrated that readers spent more time on the disambiguating fragment of a sentence like (1) during the first sweep of the eyes through the sentence than they did on the same region of an unambiguous control sentence. Importantly, according to garden path theory, ambiguous sentences should be processed initially according to structural principles alone. That is to say, semantic and contextual factors should not influence the initial analysis that is assigned to the sentence (see Frazier & Rayner, 1987; Rayner et al., 1983).

In contrast, the referential theory of sentence processing (Crain & Steedman, 1985; see also Altmann, Garnham, & Dennis, 1992; Altmann & Steedman, 1988) states that preceding referential context can influence the initial syntactic analysis that is assigned to an ambiguous sentence fragment. Crain and Steedman proposed that sentences are processed in line with the principle of parsimony, according to which readers initially pursue the syntactic analysis that carries fewest unsupported referential presuppositions. For instance, when a sentence contains a definite NP like *the safe* then this presupposes that at least one safe exists in the discourse context. On reading such an expression, an attempt is made to establish a referential link between the definite NP and a referent in the discourse context. When there is only one potential referent, readers can readily establish a referential link. However, when there is more than one potential referent, it is impossible to establish an unambigous referential link. Readers therefore anticipate information that modifies the NP and disambiguates between potential referents. Altmann and Steedman provided evidence in support of this account. Using a self-paced reading methodology, they found that prior referential context influenced the time taken to process temporarily ambiguous prepositional phrase sentences such as (4) and (5).

(4) The burglar blew open the safe with the new lock and made off with the loot.
(5) The burglar blew open the safe with the dynamite and made off with the loot.

In such sentences the prepositional phrase can attach either high to modify the verb (i.e. *blew open* in 5), or low to modify the object NP (i.e. *the safe* in 4). When prior context contained a single potential referent of the object NP, subjects found it easier to process sentences with high- than those with low-attached prepositional phrases. Conversely, when prior discourse context contained two potential referents of the object NP, subjects found it easier to process sentences with low- than those with high-attached prepositional phrases.

Subsequent studies have also demonstrated that preceding referential context can influence initial processing of ambiguous prepositional phrase sentences (Britt, 1994; Britt, Perfetti, Garrod, & Rayner, 1992; Tanenhaus, Spivey-Knowlton, Eberhard, & Sedivy, 1995; but see also Clifton & Ferreira, 1989; Ferreira & Clifton, 1986). Furthermore, context effects have been observed for sentences that are ambiguous between relative clause and complement clause readings (Altmann, Garnham, & Dennis, 1992; Altmann, Garnham, & Henstra, 1992; but see also Mitchell, Corley, & Garnham, 1992) and also for some forms of ambiguous relative clause sentences (Spivey-Knowlton, Trueswell, & Tanenhaus, 1993; Trueswell & Tanenhaus, 1991). However, prior context may not influence initial processing decisions for all types of relative clause construction. To date, no studies have shown that referential context can prevent subjects from being garden pathed when they read *short* reduced relative clause sentences (e.g. 6) in which a second NP occurs immediately after the ambiguous verb (Murray & Liversedge, 1994). To be clear, we use the term *short* to refer to relative clause sentences with an NP, verb, NP construction. The term does not refer to the number of words in a sentence.

(6) The child read the story began to cry.

What we believe to be important about *short* reduced relative clause sentences is that prior to the point of disambiguation a direct object reading is available, which subjects are

strongly predisposed to adopt. We will discuss the theoretical implications of our distinction between *short* and other types of relative clause sentences in detail later.

Ferreira and Clifton (1986) demonstrated that preceding referential context does not guide parsing of *short* reduced relative clause sentences. They conducted an eye movement experiment in which subjects read *short* reduced relative clause and direct object sentences preceded by contexts that either supported the appropriate reading of the ambiguous sentence or were designed to be neutral with regard to its analysis. However, reading times for the disambiguating region of reduced relative clause sentences were longer than those for the same region of direct object sentences, regardless of the nature of the preceding context.

Britt et al. (1992) monitored eye movements as subjects read direct object and *short* reduced relative clause target sentences, which were either presented in isolation or preceded by a context that supported the appropriate reading. Again, they found garden path effects for the reduced relative clause sentences, regardless of whether they were presented in isolation or preceded by a felicitous context. Finally, Murray and Liversedge (1994) presented subjects with *short* relative clause or direct object sentences after contexts that contained either one or two potential antecedents of the initial NP in the target sentence. Whatever the nature of the preceding context, sentence-processing difficulty occurred as subjects read the disambiguating region of reduced relative clause sentences like (6), compared to the same region of either direct object sentences like (7) or unreduced relative clause sentences like (8).

(7) The child read the story and began to cry.
(8) The child who was read the story began to cry.

In summary, it appears that, whereas initial processing of some forms of reduced relative clause sentences may be guided by the preceding referential context, the initial syntactic analysis of *short* reduced relative clause sentences is impervious to the influence of the context. Neither garden path theory nor referential theory is able to account for both studies that do and studies that do not show contextual guidance. However, more recent constraint-based theories of sentence processing (MacDonald, 1994; MacDonald, Pearlmutter, & Seidenberg, 1994a, 1994b; Pearlmutter & MacDonald, 1992; Spivey-Knowlton & Sedivy, 1994; Spivey-Knowlton et al., 1993; Tabossi, Spivey-Knowlton, McCrae, & Tanenhaus, 1994; Trueswell, Tanenhaus, & Garnsey, 1994; Trueswell, Tanenhaus, & Kello, 1993) can account for these conflicting findings. Advocates of this approach assert that there are a large number of constraints (i.e. sources of linguistic information) that influence how a sentence is initially processed. As each word is read, the system will favour the syntactic analysis, or analyses, that are consistent with the constraints imposed thus far. As individual constraints may vary in direction and strength, the alternative syntactic analyses will compete with each other until the system settles into a state representing the current most strongly favoured analysis. From this perspective, garden path effects occur when one or more constraints overwhelmingly favour a particular syntactic analysis at a point prior to disambiguation in the sentence, and this analysis subsequently turns out to be incorrect. Importantly, constraint-based accounts permit higher order constraints to influence

lower order processing. As such, they can account for situations in which context influences initial processing decisions.

In contrast to studies that have explicitly manipulated prior referential context, a recent study reported by Ni et al. (1996) claimed to manipulate the referential properties of a reader's discourse representation using the focus operator *only* (see also Crain, Ni, & Conway, 1994). Ni et al. argue that *only* causes the reader to construct a discourse representation in which an element in focus is contrasted with a set of alternatives. Consider sentence (9).

(9) Only horses raced past the barn fell.

According to Ni et al. (1996), when readers process the subject NP—that is, *only horses*, they construct a discourse representation in which a focused set of horses is contrasted with some other set. However, as no contrast set is explicitly mentioned in the preceding discourse (because the sentence is presented in isolation), readers must infer one. Ni et al. argue that at this point readers can represent the meaning of the sentence in two possible ways. Either readers may contrast the set of horses in focus with a set of entities that are not horses, or alternatively, readers may contrast the set of horses in focus with another set of horses that differ in some respect. On the basis of the principle of parsimony, Ni et al. argue that the latter of these two alternatives will be selected, as this carries the fewest unsupported presuppositions. That is to say, readers do not have to infer the existence of entities that are not mentioned in the sentence. Having chosen to contrast two subsets of horses, readers must anticipate modifying information, such as a relative clause, that specifies the nature of the difference between the subsets. Therefore, readers should not be garden pathed when reading a reduced relative clause sentence containing *only* in the pre-subject position (e.g. 9).

Ni et al. investigated the influence of *only* on processing of reduced relative clause sentences in a self-paced grammaticality decision experiment, and in an eye movement experiment. We will not focus on Ni et al.'s self paced grammaticality decision experiment as it is not clear that this methodology reflects only those processes involved in natural language comprehension. The slow time course of the word–by–word grammaticality judgement procedure may allow subjects to use cognitive processes and sources of information that they would not ordinarily use at that same point in the sentence during natural language processing. Instead, we will concentrate on Ni et al.'s eye movement experiment, as it is generally agreed that monitoring subjects' eye movements provides a sensitive and accurate measure of the processes underlying reading.

Ni et al. used sentences like (10)–(13). The sentences either began with a definite NP or had *only* in the determiner position, and were syntactically ambiguous, or were marked as relative clause sentences through the use of an unambiguous verb. Importantly, the content of the unambiguous control sentences was not matched with that of the experimental sentences.

(10) The businessmen loaned money at low interest were told to record their expenses.
(11) Only businessmen loaned money at low interest were told to record their expenses.

(12) The vans stolen from the parking lot were found in a back alley.
(13) Only vans stolen from the parking lot were found in a back alley.

Ni et al. found that first-pass reading times (the time spent fixating a region of the sentence before exiting the region to the left or to the right) were longer at the disambiguating region for ambiguous sentences beginning with a definite NP than for either ambiguous sentences containing unambiguous control or unambiguous control sentences. Critically, there was no difference in reading times for the disambiguating region of ambiguous sentences containing *only* and unambiguous control sentences. Ni et al. interpreted these results as evidence in favour of the referential theory and, more specifically, as an indication that *only* guided how the reduced relative clause sentences were initially parsed.

Although it was clearly innovative of Ni et al. to consider the influence of focus operators within the framework of the referential theory, we have reservations concerning their conclusion that focus operators guide initial parsing decisions. It is possible that Ni et al. failed to detect a garden path effect for reduced relative clause sentences containing *only* even though one did actually occur. In their eye movement experiment, Ni et al. selected 24 materials from the 32 used in their grammaticality decision experiment. From their paper, it is unclear which 24 materials were selected; consequently we will base our comments on the full body of 32 items. Ni et al.'s material set was constructed such that 31% of sentences were disambiguated by a verbal auxiliary. As such words are frequently skipped during normal reading (see Rayner & Pollatsek, 1989), Ni et al. used a two-word disambiguating region to avoid a large proportion of zero first-pass reading times for the critical region. This meant that Ni et al. measured the reading time for a two-word region as an index of initial processing difficulty. Yet it has been shown (Murray & Liversedge, 1994; Rayner et al., 1983) that garden path effects may be detected on the first fixation made on the disambiguating word of a reduced relative clause sentence. Therefore, any short-lived garden path effects occurring at the point of disambiguation, which might have been detectable on first fixation, could have been swamped by the inclusion of subsequent fixations made on the following word. In such a situation, subjects may have quickly initiated reanalysis procedures upon detection of the garden path and used discourse information supplied by the focus operator to facilitate this process. Hence, the first-pass reading times reported in the Ni et al. study could have reflected recovery processes rather than initial processing decisions.

A second possibility is that Ni et al.'s results accurately described the manner in which the sentences were initially processed (though we note that only subjects analyses and not items analyses are provided for several critical measures). If subjects were not garden pathed when reading reduced relative clause sentences containing *only*, then it is our contention that the observed effects were due to the nature of the materials used in the study. Although Ni et al. used relative clause sentences, a close inspection of the material set revealed that there were at least three qualitatively distinct types of relative clause sentence (see 14–16).

(14) The people taught new math passed the test.
(15) The businessmen loaned money at low interest rates kept accurate records of their expenses.
(16) The boxers punched hard in the early rounds were unable to finish the bout.

Eight of the 32 sentences were *short* reduced relative clause sentences with an NP, transitive verb, NP structure (e.g. 14), of the same type as those used by Murray and Liversedge (1994). Two further sentences were like (15), with an NP, transitive verb, NP structure and then a prepositional phrase before the disambiguating second verb. The remaining 22 were similar to (16), containing a prepositional phrase after the ambiguous verb and no potential direct object.

Earlier we made the distinction between *short* reduced relative clause sentences (e.g. 14 & 15) and other types of relative clause sentence (e.g. 16). Importantly, *short* reduced relative clause sentences contain an NP immediately after the ambiguous verb. The presence of an NP after an ambiguous verb could have implications for the way in which sentences like (14) and (15) are processed compared to sentences like (16). Namely, for sentences like (14) and (15), the direct object reading is available immediately prior to the disambiguating verb, whereas this is not the case for sentences like (16). In sentence completion studies, Murray and Liversedge demonstrated that there is a very strong preference for the direct object analysis over the reduced relative clause analysis. Consequently, prior to the point of disambiguation in sentences like (14) and (15), there is an analysis other than the relative clause analysis that is strongly preferred by the processor. In constraint-based terms, the relative clause analysis has a very strong competitor prior to disambiguation. However, this is not the case for sentences like (16), which do not contain a potential direct object. For such sentences, the simple active reading with a direct object is ruled out when a prepositional phrase like *hard in the early rounds* is read. Hence, prior to the point of syntactic disambiguation, sentences like (16) are ambiguous between a simple active analysis without a direct object (e.g. *The boxers punched hard in the early rounds*) and a reduced relative clause analysis. The point is that the most strongly favoured analysis (the direct object analysis) has been ruled out prior to the point of syntactic disambiguation. In such a situation, it is quite possible that the referential properties of *only* could influence a parsing decision that selects between two closely competing analyses. Thus, Ni et al.'s results may have occurred due to the particular types of relative clause sentence used in their study, and their findings may not generalize to all types of relative clause sentence. It should also be noted that at least two materials were pragmatically disambiguated prior to the point of syntactic disambiguation (e.g. *The cookies baked in the brick ovens were sold at the carnival*), and we would not expect garden path effects for these sentences.

We also have qualms about the experimental design adopted by Ni et al. The unambiguous control sentences were entirely different in content from the ambiguous experimental sentences. Hence, in order to gauge the magnitude of any garden path effect that might have occurred, the experimenter is forced to compare reading times for the disambiguating region of experimental and control sentences that differ in content and meaning. Such a comparison is far from ideal. Previous studies using reduced relative clause sentences (e.g. Ferreira & Clifton, 1986; Murray & Liversedge, 1994; Rayner et al., 1983) have either included a relative pronoun and auxiliary verb (e.g. *which was*, *which were*, etc.), or substituted a morphologically marked unambiguous verb into the sentence frame (e.g. *selected*, *chosen*). Either manipulation ensures that regions of interest are identical across experimental and control sentences.

We conducted an eye movement experiment to investigate whether readers are garden pathed when processing *short* reduced relative clause sentences with *only* in the pre-subject position. We used a homogeneous set of *short* reduced relative clause sentences as experimental items because sentences with this type of relative clause structure are most likely to produce results contrary to those predicted by Ni et al. and so constitute a strong test of their claim that referential properties of *only* can guide initial parsing decisions. Our experiment also addressed methodological weaknesses of the Ni et al. study. We used reduced relative clause sentences that were disambiguated by a single word that was not a function word and was therefore unlikely to have been skipped. Additional, reading times for reduced relative clause sentences were compared with reading times for their corresponding unreduced forms, ensuring that comparisons were made across sentences that identical were in content (except for the relative pronoun and auxillary verb, i.e. *who were*).

If *only* guides how reduced relative clause sentences are initially parsed, then we would expect to detect processing difficulty from the first fixation on the disambiguating verb of reduced relative clause sentences beginning with a definite NP, but not for those beginning with *only*. No disruption should occur in the same region of unambiguous unreduced sentences. Conversely, if parsing is not guided by the focus operator, then we would anticipate garden path effects on the disambiguating verb of reduced sentences both with and without *only*, but no such effects for the unreduced sentences. Furthermore, if *only* influences re-analysis rather than initial parsing decisions, we should observe its influence at some point after the reader has detected the misanalysis and initiated reanalysis procedures.

EXPERIMENT

Method

Subjects

Thirty-two English speakers with normal, uncorrected vision were paid £5 to participate. Some had previous experience of eye-tracking experiments.

Materials and Design

We constructed 36 sets of four sentences like (17)–(20). We constructed four lists of items, containing nine items of each form. No item appeared more than once in any list. Item forms were rotated across lists according to a Latin Square design. The sentences were either reduced or unreduced and began with either the focus operator *only* or a definite NP. The full set of materials are listed in the Appendix.

(17) The teenagers allowed a party invited a juggler straightaway.
(18) Only teenagers allowed a party invited a juggler straightaway.
(19) The teenagers who were allowed a party invited a juggler straightaway.
(20) Only teenagers who were allowed a party invited a juggler straightaway.

Procedure

An SRI Dual Purkinje Generation 5.5 eye-tracker was used to monitor the gaze location and movement of subjects' right eye during reading. The eye-tracker has an angular resolution of 10° arc. A PC displayed materials on a VDU screen 60 cm from subjects' eyes. The tracker monitored subjects' gaze location every millisecond. The tracker's output was sampled to produce a sequence of eye fixations, recorded as *x* and *y* character positions, with their start and finish times.

Before the start of the experiment, subjects read an explanation of the eye-tracking procedure and a set of instructions. They were instructed to read at their normal rate and to read to comprehend the sentences as well as they could. Subjects were then seated at the eye-tracker and were placed on a bite bar. A forehead restraint was also used to minimize head movements. Subjects then completed a calibration procedure.

Before each trial, a fixation cross appeared near the upper left corner of the screen. Immediately subjects fixated this cross, the computer displayed a target sentence, with the first character of this sentence replacing the fixation cross. This also served as an automatic calibration check, as the computer did not display the text until it detected a stable fixation on the cross. If subjects did not rapidly fixate the cross, the experimenter re-calibrated the eye-tracker. The experiment was conducted in two blocks, with a short intervening break while the experimenter set up the equipment for the second block; subjects were calibrated at the beginning of both blocks, with other re-calibrations performed every eight materials to maintain a high level of accuracy. This meant that the eye-tracker was calibrated a minimum of 10 times during the experiment.

Once subjects had finished reading each sentence, they pressed a key, and the computer displayed a comprehension question such as *Did any of the teenagers invite a juggler?*. Half of these questions had *yes* answers, and half had *no* answers. Subjects responded by fixating either the word *yes* or the word *no* presented below the question. There was no feedback on their answers.

The computer displayed each experimental list in a fixed random order, together with 11 filler items and 32 items from an unrelated experiment investigating anaphor resolution (e.g. *The newlyweds bought a house in the country. The house was located at the edge of a forest.*).

Results

Regions

The test sentences were divided into six scoring regions indicated by vertical lines in (21). The first of these regions contained the first-mentioned NP (e.g. *The teenagers* or *Only teenagers*) in the reduced conditions. It also contained the disambiguating phrase *who were* in the unreduced conditions.

(21) Only/ The teenagers (who were)| allowed a| party| invited| a juggler| straightaway.

Region 2 contained the first verb and the following article (e.g. *allowed a*). Region 3 contained the following noun (e.g. *party*).[1] Region 4 was the critical region, containing the main verb, which disambiguated the reduced sentences (e.g. *invited*). Region 5

[1] A second set of analyses were also conducted in which Region 3 contained the first verb (e.g. *allowed*), and in which Region 4 contained the following noun-phrase (e.g. *a party*). The analyses with the regions partitioned in both these ways were very similar.

contained the following NP (e.g. *a juggler*), and Region 6 contained the final adverbial clause (e.g. *straightaway*).

Analysis

An automatic procedure pooled short contiguous fixations. Fixations of less than 80 msec were incorporated into larger adjacent fixations within one character, and fixations of less than 40 msec that were not within three characters of another fixation were deleted. Prior to analysing the eye movement data, we removed those trials where either subjects failed to read the sentence, or there had been tracker loss. More specifically, those trials were removed where two or more adjacent regions had zero first-pass reading times. This procedure accounted for 3.0% of the data. We also examined subjects' responses to comprehension questions. The comprehension rate was high, with correct responses on 94% of occasions.

We computed several reading-time measures when analysing the data. We defined first-pass reading time for a region as the sum of the fixation durations from the first fixation in a region until the point of fixation exited the region to either the left or the right. The total reading time for a region was defined as the sum of all fixation durations made in a region. We also considered two additional reading-time measures to those employed by Ni et al. (1996): first-fixation duration in the disambiguating region and re-reading time. Re-reading time was defined as the time spent re-reading earlier portions of the text after making a regression from the disambiguating region, which terminated the first-pass reading time (Liversedge, Paterson, & Pickering, 1998; Liversedge, Pickering, & Traxler, 1996).

Most researchers report a combination of first-fixation duration, and first-pass and total reading times in order to minimize the possibility of failing to detect an effect. Measures of first-fixation duration and first-pass reading time traditionally have been interpreted as indices of difficulty experienced when initially processing a word or phrase (e.g. Rayner, Sereno, Morris, Schmauder, & Clifton, 1989). For instance, first-fixation duration has been shown to be longer for words that disambiguate a temporarily ambiguous sentence in favour of the initially dispreferred reading, than for the same words in an unambiguous version of the sentence (e.g. Murray & Liversedge, 1994; Rayner et al., 1983). However, quite often the region of text that is predicted to cause processing difficulty is fixated more than once before the eyes move on (or backwards) in the text. As all of these fixations can contribute to initial processing, first-pass reading time is generally considered to be a better measure of the time spent initially processing a word. Total reading time is reported as a measure of the overall time spent reading a word. If an effect is obtained for total reading time on a region of text but not for earlier measures, such as first-fixation duration or first-pass reading time, then this is generally taken as an indication of the experimental manipulation having a relatively late effect on processing.

However, Liversedge et al. (1998) argue that not only is it possible for an experimenter to fail to detect an effect when reporting only a combination of first-fixation, first-pass, and total reading times, but also that the experimenter is likely to miss potentially valuable information about the consequences, in terms of eye movement behaviour, of encountering a problem in the text. Liversedge et al. assume that experimenters will partition sentences so that they have relatively small critical regions (probably one or two content words). Liversedge et al. then document three possible outcomes of encountering a

problem in the text. Readers can maintain fixation on the problematic text until that difficulty is resolved. Alternatively, they can make a rightward saccade in the hope that subsequent text will resolve their difficulty. Finally, readers can make a regressive saccade in order to re-inspect earlier portions of text to help them compute an alternative syntactic analysis. Importantly, the regressive saccade would have the effect of terminating the first-pass reading time for the region. This in turn could result in a short first-pass reading time for the problematic region, in which case first-pass reading time would be an inappropriate measure of initial processing difficulty. Furthermore, the ''traditional'' measures do not necessarily provide an indication of the amount of time subjects spend re-inspecting text in order to recover from a misanalysis, because the reader may have fixated in different regions of the sentence during re-analysis, in which case the fixations would never be summed together.

For this reason, we report re-reading times as well as first-fixation, first-pass, and total reading times. Re-reading time sums temporally contiguous fixations (fixations that occur consecutively over time) made after a first-pass regression from a region of text until the reader fixates text to the right of the region. Using this measure in association with first-fixation duration, and first-pass and total reading time measures should allow a more precise means of determining exactly when an experimental manipulation first influenced sentence processing.

The data for each region were subjected to two 2 (determiner) $\times$ 2 (sentence structure) ANOVAs, one treating subjects as a random variable and the other treating items as a random variable. The mean first-fixation durations and re-reading times for the critical disambiguating region, and the mean first-pass and total reading times for Regions 2–5 are given in Table 1.

TABLE 1
Mean First-Fixation Duration,[a] Word-skipping Rates, and Re-reading Times for Region 4 and Mean First-Pass and Total Reading Times for Regions 2–5 of the Reduced and Unreduced Relative Clause Sentences Beginning with Either the or only

		The		*Only*	
Regions	*Measure*	*Reduced*	*Unreduced*	*Reduced*	*Unreduced*
2	First-pass reading time (msec)	256 (12.0)	215 (10.3)	248 (13.1)	236 (21.2)
	Total reading time (msec)	549 (43.6)	337 (19.5)	444 (28.6)	328 (25.6)
3	First-pass reading time (msec)	233 (11.7)	230 (11.8)	234 (11.2)	235 (12.4)
	Total reading time (msec)	386 (34.0)	296 (16.9)	321 (22.0)	307 (24.7)
4	First-fixation duration including zeros (msec)	219 (20.7)	192 (17.6)	191 (17.1)	173 (19.0)
	First-fixation duration excluding zeros (msec)	232 (10.3)	217 (10.2)	215 (10.7)	203 (6.8)
	Word-skipping rate (%)	5.7	13.3	12.2	18.3
	First-pass reading time (msec)	272 (15.7)	238 (17.6)	250 (16.2)	213 (14.3)
	Total reading time (msec)	446 (37.5)	310 (35.2)	355 (30.9)	261 (19.0)
	Re-reading time (msec)	155 (28.9)	31 (11.6)	68 (16.4)	65 (22.1)
5	First-pass reading time (msec)	263 (16.8)	265 (14.9)	282 (17.1)	250 (14.5)
	Total reading time (msec)	444 (35.4)	402 (30.3)	428 (31.5)	360 (22.3)

Note: Standard errors are given in parentheses.
[a] Including and excluding zero fixation times.

First-pass Reading Time. At Region 2, there was no effect of determiner, $F_1,F_2 < 1$, but there was a significant main effect of sentence structure, $F_1(1, 31) = 5.28$, $p < .05$, and $F_2(1, 35) = 8.33$, $p < .01$, with a longer reading time for the reduced sentences than for the unreduced sentences. There was also an interaction between determiner and sentence structure that was marginal, $F_1(1, 31) = 3.74$, $p < .06$, and $F_2(1, 35) = 4.13$, $p < .05$. Means comparisons showed that there was no difference in first-pass reading times for reduced sentences containing *the* and reduced sentences containing *only*, $F_1,F_2 < 1$. There was, however, a marginal effect of determiner with longer reading times for unreduced sentences beginning with *the* rather than *only*, $F_1(1, 31) = 3.94$, $p < .06$, and $F_2(1, 35) = 4.69$, $p < .05$.

No significant effects were found at Region 3, all Fs < 1. However, at Region 4, the critical disambiguating region, there was a significant main effect of determiner, $F_1(1, 31) = 5.63$, $p < .05$, and $F_2(1, 35) = 7.60$, $p < .01$, with longer first-pass reading time for sentences beginning with *the* than for sentences beginning with *only*. There was also a significant main effect of sentence structure, $F_1(1, 31) = 11.01$, $p < .01$, and $F_2(1, 35) = 6.33$, $p < .05$, with longer first-pass reading times for reduced than for unreduced sentences. Crucially, there was no interaction between determiner and sentence structure, $F_1,F_2 < 1$.

At region 5, there was no main effect of determiner, $F_1,F_2 < 1$, no main effect of sentence structure, $F_1(1, 31) = 1.67$, $p > .05$, and $F_2(1, 35) = 2.96$, $p > .05$, and an interaction that was not reliable by items, $F_1(1, 31) = 6.99$, $p < .05$, and $F_2(1, 35) = 2.22$, $p > .05$.

First-fixation Duration. There was a significant main effect of determiner, $F_1(1, 31) = 14.01$, $p < .001$, and $F_2(1, 35) = 11.63$, $p < .01$, with longer first fixations in the disambiguating region of sentences containing *the* than in the same region of sentences beginning with *only*. There was also a significant main effect of sentence structure, $F_1(1, 31) = 6.47$, $p < .05$, and $F_2(1, 35) = 4.40$, $p < .05$, with longer initial fixations in the disambiguating region of reduced than unreduced relative clause sentences. There was no interaction between determiner and sentence structure, $F_1,F_2 < 1$. These results are in line with the first-pass reading time results for Region 4.[2]

[2] We are grateful to Wayne Murray for pointing out potential problems in interpreting first-fixation duration when this includes zero fixation times for trials in which subjects did not fixate the disambiguating verb during the first pass. This assumes that it took zero time to process the critical word on those occasions when it was skipped by the reader. We therefore conducted a further analysis treating trials with zero fixation duration as missing values, and we examined the incidence of skipping the verb. Mean first-fixation duraction (excluding zero fixation times) and word-skipping rate are included in Table 1. There was a significant main effect of determiner, $F_1(1, 31) = 4.56$, $p < .05$, and $F_2(1, 36) = 4.44$, $p < .05$, with longer first-fixation duration for sentences beginning with *the* than for those beginning with *only*. However, the main effect of sentence structure was not significant, $F_1(1, 31) = 2.43$, $p > .05$, and $F_2 = 1.64$, $p > .05$, although the difference between means was in the same direction as that obtained for the analysis of first-fixation duration that included zero fixation times. First-fixation duration was longer for reduced than for unreduced relative clause sentences. An examination of word-skipping rate showed that subjects were more likely to skip the verb when it was part of unreduced than when it was part of reduced relative clause sentences. When fixation time and word-skipping rate are considered together, these suggest that subjects found the critical word easier to process initially, resulting in shorter first-fixation duration and an increased incidence of word skipping, when the critical verb belonged to *unreduced* rather than *reduced* relative clause sentences. Importantly, there was no interaction of determiner and sentence structure, $F_1,F_2 < 1$, when zero first-fixation times were excluded from the analysis.

Re-reading Time. The time subjects spent re-reading the sentence after first encountering the disambiguating region produced a significant main effect of determiner, $F_1(1, 31) = 9.74$, $p < .01$, and $F_2(1, 35) = 5.79$, $p < .05$, with a longer re-reading time for sentences beginning with *the* than for those beginning with *only*. There was also a significant main effect of sentence structure, $F_1(1, 31) = 20.35$, $p < .001$, and $F_2(1, 35) = 13.76$, $p < .001$. Subjects spent longer re-reading the reduced sentences than the unreduced sentences. Importantly, there was also a highly significant interaction between determiner and sentence structure, $F_1(1, 31) = 8.31$, $p < .01$, and $F_2(1, 35) = 13.87$, $p < .001$. Means comparisons showed that more time was spent re-reading early portions of reduced sentences than unreduced sentences when they began with *the*, $F_1(1, 31) = 17.41$, $p < .001$, and $F_2(1, 35) = 27.98$, $p < .001$. However, there was no difference in the time spent re-reading reduced and unreduced sentences beginning with *only*, $F_1, F_2 < 1$.

Total Reading Time. At Region 2, there was a significant main effect of determiner, $F_1(1, 31) = 20.57$, $p < .001$, and $F_2(1, 35) = 12.54$, $p < .001$, with shorter total reading times for sentences containing *only* than those containing *the*. There was also a significant main effect of sentence structure, $F_1(1, 31) = 69.38$, $p < .001$, and $F_2(1, 35) = 81.71$, $p < .001$, with longer total times for reduced sentences than for unreduced sentences. There was a significant interaction between determiner and sentence structure, $F_1(1, 31) = 9.00$, $p < .01$, and $F_2(1, 35) = 11.26$, $p < .01$. The magnitude of the difference in total reading time for Region 2 of reduced and unreduced sentences was smaller for sentences containing *only* (116 msec) than for sentences containing *the* (212 msec). Means comparisons showed that total reading times were longer for reduced sentences than for unreduced sentences, both when they began with *the*, $F_1(1, 31) = 88.34$, $p < .001$, and $F_2(1, 35) = 106.92$, $p < .001$, and when they began with *only*, $F_1(1, 31) = 26.57$, $p < .001$, and $F_2(1, 35) = 31.31$, $p < .001$. The total times for Region 3 showed a main effect of determiner that was significant by subjects and marginal by items, $F_1(1, 31) = 5.01$, $p < .05$, and $F_2(1, 35) = 3.78$, $p < .06$. As before, total reading times were longer for sentences containing *the* than sentences with *only*. There was also a significant main effect of sentence structure, $F_1(1, 31) = 13.36$, $p < .001$, and $F_2(1, 35) = 12.82$, $p < .01$, with longer total reading times for the reduced sentences than for the unreduced sentences. Once again, there was a significant interaction between determiner and sentence structure, $F_1(1, 31) = 4.26$, $p < .05$, and $F_2(1, 35) = 8.10$, $p < .01$. Means comparisons showed that total reading times were longer for reduced than for unreduced sentences beginning with *the* $F_1(1, 31) = 12.22$, $p < .01$, and $F_2(1, 35) = 21.51$, $p < .001$, but there was no difference in total reading time for reduced and unreduced sentences beginning with *only*, $F_1, F_2 < 1$.

In Region 4, the critical disambiguating region, there was a significant main effect of determiner, $F_1(1, 31) = 13.16$, $p < .01$, and $F_2(1, 35) = 27.83$, $p < .001$, with a longer reading time for sentences beginning with *the* than for sentences containing *only*. There was also a significant main effect of sentence structure, $F_1(1, 31) = 38.32$, $p < .001$, and $F_2(1, 35) = 31.80$, $p < .001$, with longer total reading times for reduced than for unreduced sentences. The interaction between determiner and sentence structure was not significant, $F_1(1, 31) = 1.80$, $p > .05$, and $F_2(1, 35) = 1.75$, $p > .05$. However, the pattern

of means was similar to that which occurred for Regions 2 and 3. The magnitude of the difference between reduced and unreduced sentences containing *only* was smaller (94 msec) than the difference between reduced and unreduced sentences containing *the* (136 msec).

In Region 5, there was a main effect of determiner that was marginal in both subjects and items analyses, $F_1(1, 31) = 3.52$, $p < .08$, and $F_2(1, 35) = 3.41$, $p < .08$, with longer total reading times when sentences began with *the* than when they began with *only*. Also, there was a significant main effect of sentence structure, $F_1(1, 31) = 12.84$, $p < .01$, and $F_2(1, 35) = 9.95$, $p < .01$, with longer reading times for reduced sentences than for unreduced sentences. The interaction between determiner and sentence structure was not significant, $F_1 < 1.5$, $F_2 < 1$.

DISCUSSION

The results of this experiment are clear. There was a robust garden path effect influencing the first-pass reading time for the disambiguating word. The effect occurred for both reduced sentences beginning with *the* and reduced sentences beginning with *only*, suggesting that readers initially opted for the simple active reading of the reduced relative clause sentences regardless of whether the sentence included the focus operator. The garden path effect was also found to influence first-fixation duration, but the effect was robust only when trials were included in which the region was skipped. The difference was not significant when these trials were removed. More importantly, however, there was no interaction of determiner and sentence structure for either the first-fixation duration or the first-pass reading of the disambiguating word. These results demonstrate that the referential properties attributed to *only* did not guide initial processing of the relative clause sentences used in this experiment. Instead, the results are consistent with earlier findings that referential properties of text do not influence initial processing of *short* reduced relative clause sentences (Britt et al., 1992; Ferreira & Clifton, 1986; Murray & Liversedge, 1994).

Although the inclusion of the focus operator did not guide initial processing decisions, it did appear to facilitate re-analysis procedures that readers initiated upon detection of a garden path. The re-reading time measure showed that after detecting the garden path on the disambiguating word of reduced sentences, subjects spent more time re-reading earlier portions of sentences that began with *the* than they did re-reading sentences that began with *only*. A similar pattern of results was obtained for the total reading times for Regions 2 and 3—the regions that contained the modifying information. If we assume that these measures provide an indication of the ease with which subjects were able to recover from a garden path, then recovery was easier when the sentence included a focus operator than when it did not.

We also found that, although the inclusion of a focus operator did not influence initial parsing decisions for reduced relative clause sentences, it did influence the amount of time spent initially reading the critical verb of both reduced and unreduced forms of the sentence. The critical region of sentences containing *only* took less time to read during the first pass than did sentences containing *the*. This main effect of determiner may have occurred because the inclusion of the focus operator indicated to readers that a contrast

was to be made between two sets of entities. Such a contrast is not cued when sentences begin with *the*. Therefore, on encountering an initial NP with *only* in the determiner position, readers could have constructed a discourse representation containing two contrasting sets. This will have consequences for the subsequent processing of both reduced and unreduced relative clause sentences. When reading unreduced relative clause sentences, the inclusion of *only* will facilitate the construction of a discourse model in which the contrast between two sets is specified by the relative clause. This facilitation should occur at the critical verb since this verb marks the completion of the relative clause and is therefore the first point in the sentence at which the reader can use the relative clause information to specify the contrast between sets.

If we now consider reduced relative clause sentences, it seems likely that subjects initially processed these as simple active constructions. Therefore, subjects cannot have taken the ambiguous verb-phrase to specify the nature of the contrast between sets in the discourse model. Nonetheless, the inclusion of the focus operator could have caused readers to construct a discourse model containing two contrasting sets. If subjects did adopt a simple active reading, it seems plausible that one set would be the set described by the initial NP, and the other would be the set of all other things. However, when the sentence is disambiguated as a relative clause, subjects must re-analyse the sentence and take the relative clause to specify the nature of the contrast between the two subsets.

The interaction between determiner and sentence structure for first-pass reading times in Region 2 lends support to this account. There was no difference between the two forms of the reduced relative clause sentence, but unreduced sentences beginning with *only* took longer than unreduced sentences beginning with *the*. We would expect no difference between first-pass reading times for reduced sentences with and without *only* because the modifying information in Region 2 has no bearing on the nature of the difference between the two contrasting sets that a reader presumably instantiates when initially processing a sentence containing *only* as a simple active construction. For the unreduced sentences, however, we did find a difference in first-pass reading time at Region 2. Subjects took longer to read Region 2 of unreduced sentences beginning with a focus operator than they did to read the same region of unreduced sentences beginning with *the*. This difference in processing time probably indicates that subjects were constructing a discourse representation containing two contrasting sets for the unreduced sentences containing *only*, but that they were not doing so for sentences beginning with *the*.

If this explanation is correct, it suggests that readers were adopting the non-restrictive reading rather than the restrictive reading of unreduced relative clause sentences beginning with *the*. In a non-restrictive reading of a relative clause sentence, the modifying information is simply taken to provide more specific information about the single set of entities under discussion rather than information specifying a distinction between contrasting sets. Importantly, if the reader were to adopt a non-restrictive reading of the unreduced relative clause sentences beginning with *the*, they need never instantiate two contrasting sets in their discourse representation, and consequently, as we observed, we would expect shorter reading times in Region 2 for unreduced sentences beginning with *the* than for similar sentences beginning with *only*.

Having established that the inclusion of *only* did not guide initial syntactic processing of *short* reduced relative clause sentences, but did facilitate recovery from the resulting

garden path, we are forced into a reappraisal of Ni et al.'s (1996) account. To recapitulate, Ni et al. proposed that on encountering the NP *only teenagers* in a sentence like (17), readers will construct a discourse representation containing two contrasting sets: a focus set and a contrast set.

(17) Only teenagers allowed a party invited a juggler straightaway.

For reasons of parsimony, the reader will elect to represent a focus set and a contrast set that contain the same type of entity (i.e. two sets of teenagers). The reader then anticipates modifying information that specifies the nature of the set in focus, and in doing so allows the reader to infer the nature of the complementary contrast set. However, the results of the present experiment indicate that this procedure cannot have occurred, as subjects were garden pathed when reading reduced relative clause sentences with and without a focus operator.[3]

An alternative explanation, which is consistent with the findings of our experiment, is that when subjects read a *short* reduced relative clause sentence beginning with *only* they initially construct a discourse representation in which the two sets do not contain the same type of entity. Consider once more sentence (17). Upon reading the NP *only teenagers*, the reader may instantiate a discourse representation in which a focus set of teenagers is contrasted with a set comprising all things other than teenagers (i.e. not teenagers). Such a discourse representation would be appropriate for the simple active analysis that we presume subjects initially adopted when they read *short* reduced relative clause sentences containing a focus operator. When subjects encounter the syntactically disambiguating verb they detect a misanalysis and are forced to modify the two contrasting sets in the discourse representation. In order to recover from the misanalysis, the reader must further restrict the specification of the focus set, from teenagers to teenagers who were allowed a party. They may also redefine the contrast set as teenagers who were not allowed a party.

When subjects process a reduced relative clause beginning with a definite article, however, they receive no cue indicating that a contrast between two sets must be made. Consequently, the reader does not instantiate two contrasting sets in the discourse representation. Upon detecting an initial misanalysis at the disambiguating verb, the reader must reanalyse the sentence and either adopt a non-restrictive reading of the relative clause sentence or, alternatively, construct from scratch a discourse representation in which two sets are contrasted. This operation would be more costly in processing time than simply modifying two sets that are already present in the discourse representation, and it would explain the longer re-reading times for reduced relative clause sentences beginning with the definite article than for those beginning with the focus operator. An important point that follows from this discussion is that, for *short* reduced relative clause sentences beginning with either *the* or *only*, initial parsing decisions appear to have

[3] We note that both the present study and that of Ni et al. (1996) confound the inclusion of the focus operator *only* with definiteness, another variable which has been shown to affect syntactic processing. However, although this confound exists, it cannot explain the differences in patterns of reading times that exist between the two studies.

dictated the nature of the discourse representation, rather than the nature of the discourse representation dictating initial parsing decisions. Such a conclusion seriously questions the generality of the principle of parsimony and undermines the referential theory.

Although *only* does not influence initial processing of *short* reduced relative clause sentences, it is possible that it could influence initial processing of other types of reduced relative clause sentence. We have contrasted *short* reduced relative clause sentences, for which there is a strong predisposition to adopt a direct object reading, with other reduced relative clause constructions in which the direct object reading is ruled out prior to the point of syntactic disambiguation. It is possible that *only* could influence the initial processing of this latter type of construction, which is temporarily ambiguous between the relatively dispreferred simple active without direct object reading and a relative clause reading. By cueing the construction of a discourse model containing two contrasting sets, *only* may favour the selection of a reduced relative clause reading over a simple active without direct object reading prior to the point of syntactic disambiguation. If this is the case, then readers may not experience a garden path effect for reduced relative clause sentences with the same construction as (16).

We have demonstrated that Ni et al.'s (1996) account of the influence of focus operators on initial parsing decisions does not apply to *short* reduced relative clause sentences. There are other more general weaknesses to Ni et al.'s account of the processing of sentences containing a focus operator. First, Ni et al. do not provide a convincing account of the processing that takes place when a simple active sentence such as (22) is read.

(22) Only horses raced past the barn and fell.

Such sentences do not appear at all difficult to process, yet according to Ni et al., readers should construct a discourse representation that contrasts two sets of horses and initially embark upon a relative clause analysis of the sentence. Upon encountering the verb *fell*, readers should have to re-analyse the sentence as a simple active construction and modify the discourse representation accordingly. If Ni et al.'s account is correct, then simple active sentences such as (22) should be difficult to process. Our account makes the more plausible prediction that sentences such as (22) will be processed as simple actives, and that readers will construct a discourse representation that contrasts the set of horses with the set of all other things.

A second question arises when Ni et al.'s account is applied to sentences that contain more than one modifying clause (e.g. 23).

(23) Only horses raced in the Derby, owned by the Queen and bred in Ireland fell.

According to Ni et al., on processing the subject NP in a sentence such as (23), readers will opt for the most parsimonious discourse representation—that is, one that contains two contrasting sets of horses. The reader will then anticipate modifying information that specifies the nature of the contrast between these two sets. However, Ni et al. do not specify how much modifying information is anticipated by the reader. In a sentence such as (23), the nature of the contrast between the two sets cannot be determined until all three modifying clauses are processed and the reader reaches the final verb *fell*. In

principle, such a sentence could contain an infinite number of modifying clauses that specify the nature of the contrast between the two sets. If Ni et al.'s account was correct, then readers would have two options when reading a sentence such as (23). First, readers might defer committing to a discourse representation that specifies the nature of the contrast between the two sets of horses until all of the modifying information is read. Alternatively, readers may construct a discourse representation that specifies the nature of the contrast as soon as the first piece of modifying information becomes available, and then iteratively update this representation as each new phrase, or clause of modifying information is encountered. It is crucial that the referential theory specifies whether the anticipation of modifying information is satisfied by the first modifying clause encountered in a sentence like (23), or is not satisfied until the reader has processed all of the modifying clauses. According to our alternative account, readers begin by contrasting a set of horses with the set of all other things, then iteratively update the discourse representation as each parsing decision is made. Thus, the contents of the focus and contrast sets will be made more specific as each modifying clause is processed.

The present results run counter to the predictions of the referential theory, as outlined by Ni et al. (1996). In line with previous studies (Britt et al., 1992; Ferreira & Clifton, 1986; Murray & Liversedge, 1994), which demonstrated that prior referential context did not influence initial processing of *short* reduced relative clause sentences, we also found that the referential properties of *only* did not guide initial parsing decisions for such sentences. Instead, there appears to be a strong predisposition initially to analyse such sentences as simple active constructions, resulting in a garden path effect at the disambiguating verb. As such, the results may be accommodated by garden path and constraint-based theories of sentence processing. Garden path theory predicts that all types of temporarily ambiguous reduced relative clause sentences are initially analysed as simple actives according to the principle of minimal attachment. The constraint-based theory predicts that multiple constraints, including those arising from the referential context, determine the analysis that is assigned to temporarily ambiguous sentences. The predisposition for adopting the simple active with direct object reading of *short* reduced relative clause sentences can be accommodated within constraint-based accounts as a strong learned constraint that, given the present results, is impervious to the influence of constraints arising from the referential context. However, constraint-based accounts should predict an influence of referential context on the processing of sentences with less strongly preferred readings, such as reduced relative clause sentences for which the simple active with direct object reading is ruled out prior to the point of syntactic disambiguation.

The experiment reported here was not designed to discriminate between garden path and constraint-based theories of sentence processing. Instead, our objective was to test Ni et al.'s claim that the focus operator *only* guided parsing of reduced relative clause sentences. We used a homogeneous set of *short* reduced relative clause sentences to conduct a strong test of Ni et al.'s theoretical claims. Our results showed that, contrary to the predictions of the referential theory, the inclusion of the focus operator *only* does not guide the initial processing of *short* reduced relative clause sentences. Subjects were garden pathed immediately upon reading the disambiguating verb of reduced relative clause sentences that either did or did not contain the focus

operator. However, the re-reading times indicated that the inclusion of the focus operator facilitated re-analysis procedures that readers initiated immediately on detecting a garden path.

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APPENDIX

Reduced relative clause sentences used in the experiment. Sentences were disambiguated as unreduced relative clause sentences by the inclusion of a relative pronoun and auxillary verb (i.e. *who were*).

The/ Only actors refused an audition received an apology within the week.
The/ Only actresses passed a bouquet gave a curtsy immediately.
The/ Only builders paid a deposit fitted a kitchen within the week.
The/ Only children passed a spoon ate an egg straightaway.
The/ Only clerks issued a work permit wanted a job before the summer.
The/ Only directors faxed a message sent a reply the next day.
The/ Only editors served a writ contacted a lawyer straightaway.
The/ Only executives typed a letter found an envelope immediately.
The/ Only farmers sold a tractor ploughed a field that afternoon.
The/ Only footballers offered an orange took a bite straightaway.
The/ Only foreigners bought a hamburger drank a coffee at the same time.
The/ Only gamblers lent a tenner placed a bet the next day.
The/ Only girlfriends bought a ring told a friend straightaway.
The/ Only girls sold a calculator solved an equation the same afternoon.

The/ Only thugs granted an amnesty surrendered a weapon straightaway.
The/ Only wives knitted a scarf developed a rash within a week.
The/ Only inspectors assigned a case wore a disguise the next day.
The/ Only journalists asked a favour wrote a story that afternoon.
The/ Only judges sent a bribe jailed a criminal immediately.
The/ Only lecturers awarded a fellowship got a promotion within the year.
The/ Only pensioners baked a cake sent a letter yesterday.
The/ Only politicians asked a question gave an answer straightaway.
The/ Only reviewers sent a book wrote an article within the week.
The/ Only salesmen paid a commission bought a car the next day.
The/ Only schoolboys lent a book wrote an essay the next day.
The/ Only spectators told a joke made a complaint that evening.
The/ Only stockbrokers made an offer called a relative within the hour.
The/ Only suspects refused a lawyer signed a confession within the hour.
The/ Only teenagers allowed a party invited a juggler straightaway.
The/ Only toddlers peeled a banana took a bite straight away.
The/ Only tradesmen offered a job bought a drink straightaway.
The/ Only visitors told a story bought a drink that evening.
The/ Only widows left a fortune married a toyboy that same year.
The/ Only women delivered a catalogue phoned a salesman the same day.
The/ Only workers allowed a tea-break smoked a cigarette that morning.
The/ Only youths posted a cheque bought a jacket yesterday.