On the origin of islands

Abstract

There is considerable controversy on island constraints on wh-dependencies in the psycholinguistics literature. One major point of contention is whether islands result from processing limitations such as Working Memory capacity or from domain-specific linguistic knowledge. The current study investigates whether islands can be reduced to processing considerations, by examining processing of another long-distance dependency, cataphora. If wh-dependencies with the licensing element (the verb or preposition) falling inside an island entail an unbearable memory load on the parser, then other dependencies, including cataphora, with a licensing element (the antecedent), inside an island, should yield a similar processing difficulty. The results from a self-paced reading experiment demonstrate that online formation of a cataphoric dependency is not affected by island constraints. We conclude that islands are not fully reducible to processing considerations and therefore must – at least in part – be of grammatical origin.

1.   Introduction

Long-distance dependencies are relations between two elements in a sentence, in which one element is dependent upon the other one in its grammatical features and/or its interpretation, and where a potentially unbounded amount of material can occur between the two elements. A well-studied type of long-distance dependency is a *wh-dependency* between a wh-filler and a verb (or the preposition) (Clifton & Frazier, 1986), as in (1a), in which the dependent element, the wh-phrase *which film*, precedes the licensing element, the verb (or the preposition). Another type of dependency is *cataphora* as in (1b) where the dependent element, the pronoun *his*, precedes the licensing element, the antecedent.

(1) a.   It was discovered which film [the studio notified Jeffrey Stewart about __]

   b. His managers revealed [that the studio notified Jeffrey Stewart about the new film.]

Although long-distance dependencies may be potentially unbounded, they are subject to constraints on the relative positioning of the dependent element and the licensor. For example, although a wh-phrase can be associated with a gap in an embedded complement clause as in (1a), it cannot be associated with a gap inside a relative clause as in (2).[1] Such a restriction is known as the Relative Clause (RC) Island condition and is a member of a larger class of constraints on wh-dependencies, 'island constraints' (Ross, 1967).

(2)   *It was discovered <u>which film</u> [$_{NP}$ the studio [$_{RC}$ that notified Jeffrey Stewart

     about __]] selected a novel for the script.

Constraints on cataphora can be illustrated by comparing (3a) and (3b): whereas *Jeffrey Stewart* can serve as an antecedent for the pronoun *his* in (3b), it cannot for the pronoun *he* in

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[1] The unacceptability of the sentences is indicated by an asterisk, *.

(3a). This is because (3a) violates the so-called Binding Condition C (BCC: Chomsky, 1981) on coreference well-formedness, whereby the pronoun cannot c-command its antecedent (informally, in a tree structure a node c-commands all its sibling nodes or their descendants, i.e., *he* c-commands *Jeffrey Stewart* in (3a) but *his* does not c-command *Jeffrey Stewart* in (3b)).

(3)   a. *He revealed [that the studio notified Jeffrey Stewart about the new film.]

         b. His managers revealed [that the studio notified Jeffrey Stewart about the new film.]

In theoretical linguistics, constraints on long-distance dependencies have been understood as grammatical constraints that regulate well-formedness of sentence structures and are specific to the type of dependency (Chomsky, 1977; 1981; Ross, 1967).[2] For example, the BCC on cataphora discussed above is a structural constraint formulated in terms of c-command (the pronoun cannot c-command its antecedent). Importantly, while it applies to all coreference dependencies, it does not apply to wh-dependencies (in fact, the opposite must hold with wh-dependencies, i.e., the wh-phrase must c-command the gap). Similarly, the island constraints on wh-dependencies have been formulated in terms of syntactic nodes (wh-dependencies may not span across certain nodes such as IP and NP).[3] Cataphoric dependencies, on the other hand, are not affected by such nodes (Chomsky, 1977) and are licit in syntactic configurations that make

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[2] For previous studies on island constraints, see Chomsky (1977, 1981, 1986, 1995, 2001), Huang (1982), Lasnik and Saito (1992), Rizzi (1990), Uriagereka (1999) among others.

[3] Islands are mostly treated as structural constraints in non-transformational grammatical frameworks as well: In the Lexical Functional Grammar (LFG) they are understood as constraints on C-structure (Kaplan and Bresnan, 1982) or on F-structure (Kaplan and Zaenen, 1989); in Generalized Phrase Structure Grammar (GPSG), islands are constraints on the configuration in which the [slash] feature appears.

wh-dependencies illicit, as can be seen by comparing (2) with (4).[4]

(4)   His managers revealed that [NP the studio [RC that notified Jeffrey Stewart about the new film]] selected a novel for the script.

Examples like (2) and (4) are thus explained by the structural differences. The relevant structures can be illustrated as follows.

==Figure 1/2 inserted here==

More recently, however, it has been suggested that at least some grammatical constraints on long-distance dependencies – island constraints, in particular – result from more general considerations involving processing load.[5] Such accounts, which we term 'Complexity accounts', argue that the process of locating a gap inside a relative clause in (2) incurs a high, even unbearable, burden on the parser during online sentence processing (Hawkins, 1999; Hofmeister and Sag, 2010; Kluender, 1998; Kluender and Kutas, 1993). When a wh-dependency is processed, the wh-phrase must be kept in working memory until it is associated with its

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[4] In most theories, wh-filler-gap dependencies and pronoun-antecedent dependencies are treated differently. See Chomsky (1977), Ross (1967), Hornstein, Lasnik and Uriagereka (2010) under transformational framework. For non-transformational frameworks, see Pollard and Sag (1994) for HPSG and Kaplan and Bresnan (1982) for LFG. Both reject the position that the binding relation is configurationally sensitive.

[5] Similar extra-grammatical approaches to islands have been proposed, e.g., by Levine and Hukari (2006) using the HPSG framework, and by Steedman and Baldridge (2011) using the Combinatorial Categorial Grammar (CCG) framework.

licensor,[6] the verb (or the preposition), and this incurs a storage cost (Fiebach, Schlesewsky and Friederici, 2001; Fiebach, Schlesewsky and Friederici, 2002; Gibson, 1998; Pickering and Barry, 1991). In addition, in Relative Clause Islands, two extra sources of difficulty cause a burden on the processor. First, both the head of the relative clause (*the studio* in (2)) and the relative pronoun (*that* in (2)) are referentially processed, and the processing difficulty arises depending on the nature of such element, e.g., its definiteness (we may call this "intervention costs") (Gibson, 1998; Hofmeister and Sag, 2010; Warren and Gibson, 2002). Second, carrying the filler across the relative clause boundary is expected to cause difficulty (Kluender, 1998, p.253). Under the Complexity account, island violations are perceived as unacceptable because the combined burden of all of these processing difficulties exceeds an acceptability threshold; as stated by Kluender (1998: 258) "…the *grammaticality* of relative and wh-islands can be *reduced* to the interaction of this set of processing primitives" (emphasis by authors).

Part of the appeal of the Complexity account is that processing factors which explain island violations also explain a range of other seemingly disparate phenomena, such as gradations in the acceptability of center embedding constructions (Gibson, 1998, among others), as well as the difficulty of object relative clauses as compared to subject relatives (Carreiras et al., 2010; and see Hsiao and Gibson, 2003 for recent review). Our study tests the generality of the processing complexity account by considering its application to cataphoric dependencies. Consider (4),

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[6] As suggested by Kluender and Kutas (1993) the wh-element is retrieved from the memory at the gap position, and this retrieval process may incur additional costs. This may also hold true for cataphoric dependencies. When a pronoun is associated with its antecedent, the information carried by a pronoun (e.g., gender, number, person, animacy, case and so on) is to be retrieved, and such retrieval may incur additional costs.

which includes a licit cataphoric dependency between *his* and *Jeffrey Stewart,* and compare it with – (2) which illustrates an illicit wh-dependency that violates an island constraint.

Examples (4) and (2) share a number of features that are relevant to the Complexity account. In both sentences, a dependent element has to be stored in memory before the long-distance dependency can be resolved; in (4), it is the pronoun *his*, while in (2) it is the wh-phrase *which film*. Moreover, in both sentences these dependencies have to straddle both a definite NP (*the studio*) and a relative clause boundary. Under complexity accounts, it is these factors that lead to the perception of unacceptability in the island violation in (2). Yet, in (4), there is no perceived unacceptability, at least at an intuitive level. The apparent acceptability of (4) may appear to be hard to explain with the Complexity account, given the similarities between (4) and (2) noted above, and also because such accounts that rely on general processing complexity considerations should not be stipulated to apply only to particular constructions or grammatical operations such as wh-dependencies. However, the intuitive contrast in acceptability judgments *per se* does not constitute direct evidence against the Complexity approach, for which the original predictions are formulated regarding how dependencies are formed in real-time. The cataphoric dependency in (4), rather than being established immediately during online processing, may be established late as a result of some coercion, e.g., when no other antecedent for the pronoun is found (see Garrod, Freudenthal and Boyle, 1994; Garrod and Terras, 2000; Sanford, Moar and Garrod, 1988, for evidence that formation of referential and other dependencies can be delayed). In order to test the prediction of the Complexity account, we need to know whether the parser attempts to link the pronoun and its antecedent across the relative clause island [NP *the studio* [RC *that …*]] immediately during online processing.

2.   Active Dependency Formation

Much research on wh-dependencies has shown that upon encountering a wh-phrase the parser triggers a search for a licensor (e.g., a verb that assigns the thematic role to the fronted wh-phrase) and aims to complete the dependency as soon as possible (Aoshima, Phillips and Weinberg, 2004; Clifton Jr. and Frazier, 1986; Frazier, Clifton and Randall, 1983; Frazier and Flores D'Arcais, 1989; Lee, 2004; Phillips, 2006; Stowe, 1986; Wagers and Phillips, 2009). To do so, it postulates a gap at every relevant position (at least temporarily) even before bottom-up information confirming the presence of the gap becomes available (Crain and Fodor, 1985; Frazier and Flores D'Arcais, 1989; Stowe, 1986; Tanenhaus, Boland, Garnsey and Carlson, 1989). The parser's preference for the shortest dependency has been linked to the necessity to minimize the cost of storing the wh-phrase in working memory (Chen, Gibson and Wolf, 2005; Gibson, 1998; Pickering and Barry, 1991). Importantly, despite attempting to complete the dependency as soon as possible, the parser does not search for a licensor in positions that are inside an island (Bourdages, 1985; McElree and Griffith, 1998; Phillips, 2006; Pickering, Barton and Shillcock, 1994; Stowe, 1986; Traxler and Pickering, 1996). Such an observation, namely that island constraints are respected immediately during online processing and are not delayed, is exactly what the Complexity account of islands predicts. The syntactic account, on the other hand, explains the same finding via the claim that the parser has immediate access to grammatical constraints.

Online cataphora formation also involves an Active Search Mechanism: upon encountering a pronoun that does not have an antecedent in the preceding discourse the parser triggers an active search for an antecedent in the following discourse (van Gompel & Liversedge, 2003; Kazanina et al., 2007), and this search leads to a processing cost, which can be interpreted in terms of working memory load (Filik & Sanford, 2008). For example, Kazanina et al. (2007)

used the self-paced reading technique to examine the processing of sentences with cataphora such as (5a/b). They found that *quarterback,* the stereotypically male head noun*,* was read significantly more slowly in (5b) than in (5a), i.e., when it mismatched in gender with the preceding pronoun *his/her*. On the basis of this gender-mismatch effect (GMME), the authors argued that the parser considered the dependency between the pronoun and the subject of the *while*-clause – the earliest potential antecedent position – even before relevant bottom-up information about the antecedent became available.[7] The same study showed that the parser does not search for an antecedent in illicit positions that are c-commanded by the pronoun, thus respecting the BCC: the parser did not even temporarily consider the subject position in (5c/d) which is c-commanded by the pronoun *he/ she* (as indicated by the similar RTs at *quarterback* in (5c) vs. (5d)).

(5)   a/b. His/her managers chatted amiably with some fans while the talented, young

      quarterback signed autographs for the kids, but Carol ….

    c/d. He/she chatted amiably with some fans while the talented, young **quarterback** signed

      autographs for the kids, but Steve/Carol …

Because a cataphoric pronoun triggers an active search for an antecedent, the pronoun itself needs to be held in working memory until it is interpreted, i.e., until its antecedent is found in the following input. Hence, under the Complexity account, cataphoric dependencies with the antecedent located inside a relative clause as in (4) should have a similar effect on the parser as in a wh-dependency in (2): a working memory overload resulting from processing the relative

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[7] The fact that cataphoric dependencies are formed actively is all the more notable, as a pronoun may have an intra-sentential antecedent and/or refer to an unspecified discourse referent (with wh-dependencies, on the other hand, a wh-phrase must have a gap within the same sentence).

clause structure while storing an open dependency.

Note that pronoun dependencies and wh-dependencies can be treated distinctly in a fully processing-based approach if the parsing process is construed as consisting of two non-overlapping stages. For example, Berwick and Weinberg (1986: 169-171) suggest that wh-dependency formation takes place entirely during the structure building stage, whereas the indexing of the pronoun and the antecedent takes place after the structure of the whole sentence is built. Thus in Berwick and Weinberg's view, wh-dependencies and pronoun dependencies should be processed differently. Therefore, their theory provides a fully processing-based account of the difference between wh-dependencies and pronoun dependencies in terms of island sensitivity. Simply put, they are construed during different parsing stages and are therefore sensitive to resource constraints in different ways. Although such an account is appealing, there is an obstacle to their approach, namely Active Dependency Formation. If wh-dependency and pronoun-dependency were construed during different parsing stages, it remains unclear why pronoun dependencies would be formed actively, in a way that is very similar to wh-dependencies (see Kazanina et al., 2007). Active dependency formation in the processing of cataphora instead points to the fact that cataphoric dependencies are also formed during structure building ("construction of the tree" in Berwick and Weinberg's terms).

The experiment below uses the self-paced reading technique to test whether real-time processing of cataphoric dependencies abides by the Relative Clause Island constraint, i.e., whether the parser searches for an antecedent of a cataphoric pronoun inside a relative clause. We compare this with the effect of the BCC on the formation of cataphora.

3.   Experiment

Participants

Seventy-two undergraduate students from Northwestern University participated in the experiment for course credit. All participants were native speakers of English and gave informed consent for participation.

Design and Procedure

Twenty-eight sets of sentences such as (6) were created using a 2×2 design with factors PRONOUN CASE (Genitive vs. Nominative) and GENDER CONGRUENCY (gender-match vs. gender-mismatch). In the Genitive conditions, the first potential antecedent for the pronoun, *Jeffrey Stewart*, is located inside a relative clause. If the parser considers such a relation at an early stage of processing notwithstanding that the antecedent is located inside a relative clause, longer reading times should be found at the NP *Jeffrey Stewart* in the gender-incongruous (6b) as compared to the gender-congruous (6a) (similarly to what has been found for other cases of licit cataphora by van Gompel & Liversedge, 2003; Kazanina et al., 2007). Conversely, the lack of a difference in RTs at *Jeffrey Stewart* in (6a) vs. (6b) would suggest that the parser skips the positions inside a RC during its active search for an antecedent in online processing, as predicted by the Complexity approach. Two Nominative conditions were included in which coreference between the pronoun and the NP *Jeffrey Stewart* violates BCC as the pronoun c-commands the NP. If the parser abides by grammatical constraints on coreference during the formation of a cataphoric dependency, then candidate antecedents that are subject to BCC should not be considered at the earliest stages of dependency formation. If so, we expect similar mean RTs at the NP *Jeffrey Stewart* regardless of whether this NP matches (as in (6c)) or mismatches (as in (6d)) in gender with the preceding pronoun (as previously found by Kazanina et al., 2007). Thus in all conditions, the critical NP *Jeffrey Stewart* was located inside a relative clause, but only in the Nominative conditions was it additionally subject to the BCC.

(6)   ==Table 1 Inserted Here==

The gender of the genitive and nominative pronoun was balanced across stimuli sets: half of the sets used the masculine pronouns *he* and *his,* and the other half used the feminine pronouns *she* and *her*. The gender-match and mismatch sentences differed only in the gender of the pronoun in the first clause, which either matched or mismatched in gender of the direct object inside the relative clause (*Jeffrey Stewart*). This was always a gender-unambiguous proper name and the same across the four conditions. Additionally, to ensure that the cataphoric pronouns received a grammatical antecedent in every case, the target structures were embedded further in a sentence introduced by the conjunction *but* (see Table 1). The gender of the final clause subject (*Annie/Andy*) was chosen such that each sentence had a unique grammatical antecedent for the genitive or nominative pronoun.

Twelve English speakers rated the acceptability of experimental materials using a 1 (not acceptable) to 5 (fully acceptable) scale. Mean ratings (standard deviation) for conditions (6a-d) were 3.63 (1.18), 3.58 (1.42), 3.45 (1.66) and 3.70 (1.07), respectively, and did not significantly differ from one another (2×2 ANOVA with factors CASE (Genitive vs. Nominative) and GENDER CONGRUENCY (gender-match vs. gender-mismatch) all Fs<1). Thus sentences in different conditions were equally acceptable to English speakers. We also verified whether speakers indeed accept coreference in our experimental materials between the cataphoric pronoun and the proper name inside the relative clause. Thirty-six native English speakers made judgements in response to the question "how plausible is it that the underscored pronoun and the underscored noun refer to the same person" on a scale from 1 (impossible) to 7 (absolutely natural). Mean ratings (standard deviation) for conditions (6a-d) were Genitive, gender match: 4.61 (2.00); Genitive, gender mismatch: 2.00 (1.76); Nominative, gender match: 2.62 (1.80); and Nominative,

gender mismatch: 1.73 (1.55) respectively. A 2×2 ANOVA with factors CASE (Genitive vs. Nominative) and GENDER CONGRUENCY (gender-match vs. gender-mismatch) revealed that there was a significant main effect of CASE ($F1(1,35)=51.96$, $p=0.0001$; $F2(1,27)=285.00$, $p=0.0001$), with coreference rated as more plausible in the genitive than the nominative conditions, and a significant interaction of CASE × GENDER CONGRUENCY ($F1(1,35)=38.56$, $p=0.0001$; $F2(1,27)=36.00$, $p=0.0001$). Pairwise comparisons revealed that the Match condition was significantly more acceptable than the Mismatch condition within the Genitive pair ($F1(1,35)=58.06$, $p=0.0001$; $F2(1,27)=144.62$, $p=0.0001$) and within the Nominative pair ($F1(1,35)=21.76$, $p=0.0001$; $F2(1,27=36.15)$, $p=0.0001$). However, the significant interaction indicates that the acceptability difference between the two Genitive conditions is much larger than the difference between the two Nominative conditions. Thus, the results support our claim that cataphoric co-reference is generally acceptable when the pronoun does not c-command the antecedent, and that it is very much less acceptable when the c-command relation holds, despite the fact that in both cases the antecedent is located within a relative clause island.[8]

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[8] The fact that the Match condition is rated as significantly more acceptable than the Mismatch condition within the Nominative pair might be taken to suggest that a pronoun can find an antecedent in an island even if it c-commands the antecedent. However, the rating difference between these two conditions might simply reflect an increased willingness for participants to accept a gender matched antecedent relative to a mis-matched one, even though both conditions might be perceived as ungrammatical (recall that participants were required to evaluate a specific co-reference relation between underlined words in the sentence). For present purposes, the important point is the overall acceptability of the genitive-match condition (with ratings in the

Twenty-eight sets were distributed among 4 lists in a Latin Square design, and combined with 72 filler sentences. To mask experimental sentences, the fillers bore a number of similarities with the target items (e.g., sentence length or amount of clauses per sentence), and included no instances of unresolved anaphora.

Procedure

A word-by-word moving window task (Just, Carpenter and Woolley, 1982) was conducted on a laptop PC running Linger (Doug Rhode, MIT). Each sentence was followed by a Yes/No comprehension question.

Analysis

Only trials for which the corresponding comprehension question was answered correctly were included in the analysis. Four participants whose comprehension accuracy was below 50% were excluded from the analysis. The average comprehension accuracy for the remaining 68 participants was 85% (85.1-87.5% for individual conditions; mean accuracy did not differ by condition: all Fs<1). The regions used for the analysis corresponded to single words, except for regions corresponding to the end of the clause that combined several words (due to variation in the clause length between items). Reading times at each region were analyzed using linear mixed effects regression analysis (LMER; Baayen, 2008), and p-values were derived from Monte Carlo Markov Chain simulation. All analyses reported below include crossed random intercepts for participants and items. Random slope parameters for the interaction of fixed effects with random effects were not included, as they did not significantly improve model fit. Predictor variables were centered prior to analysis.

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upper part of the scale) relative to the other three conditions (with ratings in the lower part of the scale).

Results

==Figure 3 Inserted Here==

LMER analysis of reading times revealed a significant main effect of CASE at the main verb (region 3, $\beta = 55.89$, $t = 4.25$, $p<.001$) which is expected due to lexical differences in the preceding region between the Genitive and Nominative conditions (*managers* vs. *he/she*).

The critical regions are regions 9 and 10, which correspond to *Jeffrey Stewart*. No significant effects were found at the first name. Importantly, in region 10 (the surname *Stewart*) the main effect of CASE ($\beta = 26.20$, $t = 2.93$, $p<.001$), GENDER ($\beta = 22.64$, $t = 2.53$, $p<.001$) and the interaction CASE × GENDER ($\beta = 40.01$, $t = 2.23$, $p<.05$) were all significant.[9] Pairwise comparisons revealed significantly longer reading times for the last name in the gender-incongruous variant than in the gender-congruous variant in the Genitive condition (GMME, mean RTs: gender-match – 438.34 ms, gender-mismatch - 478.46 ms; $t = 3.35$, $p<.001$) but not in the Nominative condition (gender-match – 430.97 ms, gender-mismatch - 436.37 ms; $t<1$).

Given our study design there is a possibility that the effects found in region 10 (the last name) may be strategic. In our materials the nominative pronoun always matches the subject of the final *but*-clause in gender. However, the genitive pronoun mismatches in gender with the final subject in half of the sentences, specifically whenever it matches in gender with the name inside the relative clause. Therefore, unlike in the nominative conditions when the pronoun is genitive, it cannot be always linked to the subject of the final clause because the latter may be of opposite gender. The genitive conditions, therefore, may prompt a strategy whereby the parser examines the object inside the relative clause because the gender of the final clause subject is not

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[9] Addition of random slopes did not affect the pattern of significance, and did not significantly improve model fit.

always a licit antecedent for the pronoun. In order to test whether the GMME in the Genitive conditions resulted from such a strategy or from a genuine active dependency formation, we examined the effect of trial order (i.e., the order in which the items were encountered by each participant). If the GMME emerged due to the described strategy, we expect that there is an interaction between the trial order and the GMME (i.e., it is expected that the GMME grows as each participant gets more exposure to the stimuli during the experiment). Hence, we added the log-transformed TRIAL ORDER[10] as a fixed factor in LMER and analyzed the reading times in region 10. The LMER analysis revealed that there is no interaction of CASE × GENDER × TRIAL ORDER (t = -0.38), CASE × TRIAL ORDER (t = 0.84), or GENDER × TRIAL ORDER (t = 0.76) while there is a main effect of TRIAL ORDER (β = -191.37, t = -11.90, p < 0.001). The main effect of TRIAL ORDER suggests that reading times become faster as participants proceed through the experiment. Importantly, however, the lack of an interaction between TRIAL ORDER and other fixed factors suggests that the GMME in region 10 is not due to strategic effects described above, but rather the consequence of Active Dependency Formation.

In the remainder of the sentence, there was a near significant main effect of CASE (t = 1.81, p = .069), GENDER (t = 1.77, p = .075) but no significant interaction (t < 1) at region 16. There

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[10] The trial order is generated based on the SBIN information in the output of Linger, which specifies the position of the item in the sequence seen by the subject. Results did not differ whether or not this variable was log transformed (CASE × GENDER × TRIAL ORDER (t = -0.63)). We have also examined the order effect based directly on the SBIN information. Results did not differ depending on whether or not the SBIN variable was log transformed either (i.e., there was no interaction between SBIN (or Log-SBIN) and the other factors (CASE and GENDER): CASE × GENDER × SBIN (t = -0.71); CASE × GENDER × LOG-SBIN (t = -0.72)).

were no significant differences in any other region.

4.   Discussion

We found a gender-mismatch effect at the antecedent *Jeffrey Stewart* (in particular, at the last name *Stewart*) in the Genitive conditions, but no such effect in the Nominative conditions. The presence of a GMME indicates that the parser actively searched for an antecedent in the subject position of the relative clause, i.e., that a cataphoric dependency was formed into an island, across a relative clause boundary. The lack of a GMME at the relative clause subject in Nominative conditions indicates that the parser did not consider the NP in this position as a potential antecedent for the preceding pronoun, as such a dependency would violate BCC. In sum, a cataphoric dependency can be formed across an island domain as long as it does not violate binding constraints, in particular, BCC.

The finding that the parser does not search for an antecedent of a cataphoric pronoun in positions that are c-commanded by the pronoun, i.e., it abides by BCC in real time, replicates Kazanina et al.'s (2007) findings and further strengthens their claim that cataphoric dependencies are processed using a grammatically constrained active search mechanism. The finding that cataphoric dependency formation is unaffected by the relative clause island represents a potential argument against Complexity Approaches.[11] As explained in the introduction, the Complexity

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[11] A reviewer suggested that the current results might be explained in terms of Relativized Minimality (henceforth RM) (Rizzi 1991). However, we do not consider this proposal here because, among other reasons, (a) RM does not offer a good treatment of strong island phenomena (see Boeckx, 2008; Nunes and Uriagereka, 2000; Stepanov, 2007 among others for related discussion), and (b) RM is intended to apply to configurations where the two elements of a dependency are in a c-command relation, which is not the case in our pronoun condition.

approach considers that island effects with filler-gap dependencies are due to the processing complexity induced by intervening material between the dependent element (the wh-phrase) and the controlling element (the gap/verb). A direct extension of the Complexity approach to cataphora would predict that when similar intervening material is found between the members of a cataphoric dependency, real-time formation of the dependency should be disrupted. Conversely, our findings are compatible with approaches that distinguish two different types of long-distance dependencies (Filler-Gap dependencies and Cataphoric dependencies) and that claim that these dependencies are restricted by different set of constraints (island constraints and BCC) even though both of them involve real-time active dependency formation processes. Note that in a previous study, the type of island that we have tested (a finite relative clause island in the subject position) was reported to block online wh-dependency formation, when a similarmoving window methodology was used (Phillips 2006), and thus the difference between the cataphora-dependency formation and wh-dependency formation is clear.

One potential objection to our conclusion is the idea that our cataphora examples may be relatively easy to process because they are interpreted using pragmatic referential mechanisms, thus allowing the support of a non-syntactic level of representation. This may have the effect of improving the acceptability of our cataphoric dependencies, in the same way that certain types of islands are improved when an extracted wh-phrase is D-linked (e.g. *which boy*) relative to when it is a single word (e.g. *who*) (Pesetsky, 1987). According to Hofmeister and Sag (2010), the extra information afforded by a D-linked wh-phrase leads to facilitation in memory retrieval at the point of dependency resolution, leading to increased acceptability relative to bare wh-

phrases.[12] Thus, one might argue that if referential information facilitates retrieval of the cataphoric pronoun, allowing the dependency to be formed across the intervening relative clause boundary, then our results can be explained using processing considerations. However, given that our stimuli were presented as stand-alone sentences, the referential information afforded by our cataphoric pronouns (*he/his*) was minimal. We also note that relative clause islands of the type examined in our study appear to be immune to D-linking effects. For example, Phillips (2006) used D-linked *wh*-phrases in his experiment, but found no evidence for the formation of a wh-dependency at a potential gap-site in a finite relative clause island.

To conclude, our findings challenge approaches that attribute island effects to the processing complexity induced by intervening material between the elements of a long-distance dependency. Complexity accounts, which attribute island effects to the effect of processing complexity of the online dependency formation process, need to explain why the same complexity does not affect the formation of cataphoric dependencies. Our finding is hardly expected from Complexity-based accounts, which rely on general processing complexity considerations that should not be stipulated to apply only to wh-filler-gap dependencies.

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[12] Note, some studies have shown that D-linking contributes to extra processing cost (see De Vincenzi, 1996; Donkers, Hoeks and Stowe, in press; Kaan, Harris, Gibson and Holcomb, 2000) rather than facilitating the process as argued by Hofmeister and Sag (2010).

References

Aoshima, S., Phillips, C. and Weinberg, A. (2004). Processing filler-gap dependencies in a head-final language. *Journal of Memory and Language*, 51, 1, 23-54.

Baayen, H. R. (2008). *Analyzing linguistic data: A practical introduction to statistics*. Cambridge: Cambridge University Press.

Boeckx, C. (2008). Islands. *Language and Linguistics Compass*, 2/1, 151-167.

Bourdages, J. S. (1985). Parsing complex NPs in French. In Goodluck, H. and Rochemont, M. S. (eds.), *Island Constraints: Theory, Acquisition and Processing*. 61-87. Dordrecht: Kluwer.

Chen, E., Gibson, E. and Wolf, F. (2005). Online syntactic storage costs in sentence comprehension. *Journal of Memory and Language*, 52, 1, 144-169.

Chomsky, N. (1977). On WH-Movement. In Culicover, P., Wasow, T. and Akmajian, A. (eds.), *Formal Syntax*. 71-132. New York: Academic Press.

Chomsky, N. (1981). *Lectures on Government and Binding*. Dordrecht: Foris Publications.

Clifton Jr., C. and Frazier, L. (1986). The Use of Syntactic Information in Filling Gaps. *Journal of Psycholinguistic Research*, 15, 3, 209-224.

Crain, S. and Fodor, J. D. (1985). How can grammars help parsers. In Doaety, D. R., Karttunen, L. and Zwicky, A. M. (eds.), *Natural Language Parsing: Psychological, Computational, and Theoretical Perspectives*. 94-128. Cambridge University Press.

De Vincenzi, M. (1996). Syntactic analysis in sentence comprehension: Effects of dependency types and grammatical constraints. *Journal of Psycholinguistic Research*, 25, 117-133.

Donkers, J., Hoeks, J. C. and Stowe, L. (in press). D-linking or Set-Restriction? Processing Which-Questions in Dutch. *Language and Cognitive Processes*,

Fiebach, C. J., Schlesewsky, M. and Friederici, A. D. (2001). Syntactic Working Memory and the Establishment of Filler-Gap Dependencies: Insights from ERPs and fMRI. *Journal of Psycholinguistic Research*, 30, 3, 321-338.

Fiebach, C. J., Schlesewsky, M. and Friederici, A. D. (2002). Separating syntactic memory costs and syntactic integration costs during parsing: the processing of German WH-questions. *Journal of Memory and Language*, 47, 2, 250-272.

Frazier, L., Clifton, C. and Randall, J. (1983). Filling Gaps: Decision Principles and Structure in Sentence Comprehension. *Cognition*, 13, 2, 187-222.

Frazier, L. and Flores D'Arcais, G. B. (1989). Filler driven parsing: a study of gap filling in dutch. *Journal of Momory and Language*, 28, 331-344.

Garrod, S., Freudenthal, D. and Boyle, E. (1994). The Role of Different Types of Anaphor in the On-Line Resolution of Sentences in a Discourse. *Journal of Memory and Language*, 33, 1, 39.

Garrod, S. and Terras, M. (2000). The contribution of lexical and situational knowledge to resolving discourse roles: bonding and resolution. *Journal of Memory and Language*, 42, 526-544.

Gibson, E. (1998). Linguistic complexity: locality of syntactic dependencies. *Cognition*, 68, 1-76.

Hawkins, J. A. (1999). Processing complexity and filler-gap dependencies across grammars. *Language*, 75, 2, 244-285.

Hofmeister, P. and Sag, I. A. (2010). Cognitive constraints and island effects. *Language*, 86, 2, 366-415.

Hsiao, F. and Gibson, E. (2003). Processing relative clauses in Chinese. *Cognition*, 90, 3-27.

Just, M. A., Carpenter, P. A. and Woolley, J. D. (1982). Paradigms and processes in reading comprehension. *Journal of Experimental Psychology*, 111, 2, 228-238.

Kaan, E., Harris, A., Gibson, E. and Holcomb, P. (2000). The P600 as an indx of syntactic integration difficulty. *Language and Cognitive Processes*, 15, 2, 159-201.

Kluender, R. (1998). On the distinction between strong and weak islands: A processing perspective. In Culicover, P. W. and McNally, L. (eds.), *Syntax and Semantics 29: The Limits of Syntax.* 241-279. San Diego, CA: Academic Press.

Kluender, R. and Kutas, M. (1993). Subjacency as a Processing Phenomenon. *Language and Cognitive Processes*, 8, 4, 573-633.

Lee, M.-W. (2004). Another Look at the Role of Empty Categories in Sentence Processing (and Grammar). *Journal of Psycholinguistic Research*, 33, 1, 51-73.

McElree, B. and Griffith, T. (1998). Structural and lexical constraints on filling gaps during sentence comprehension: A time-course analysis. Journal of Experimental Psychology: Learning, Memory, and Cognition, 24, 432-460.

Nunes, J. and Uriagereka, J. (2000). Cyclicity and extraction domains. *Syntax*, 3, 1, 20-43.

Phillips, C. (2006). The Real-Time Status of Island Phenomena. *Language*, 82, 4, 795-823.

Pickering, M., Barton, S. and Shillcock, R. (1994). Unbounded Dependencies, Island Constraints, and Processing Complexity. In Clifton Jr., C., Frazier, L. and Rayner, K. (eds.), *Perspectives on Sentence Processing.* 199-224. Hillsdate, New Jersey: Lawrence Earlbaum Associates, Publishers.

Pickering, M. J. and Barry, G. D. (1991). Sentence Processing Without Empty Categories. *Language and Cognitive Processes*, 8, 229-259.

Sanford, A. J., Moar, K. and Garrod, S. (1988). Proper names and the control of focus. *Language and Speech*, 31, 43-56.

Stepanov, A. (2007). The End of CED? Minimalism and Extraction Domains. *Syntax*, 10, 1, 80-126.

Stowe, L. A. (1986). Parsing WH-constructions: evidence for on-line gap location. *Language and Cognitive Processes*, 3, 227-245.

Tanenhaus, M., K., Boland, J., E., Garnsey, S., M. and Carlson, G., N. (1989). Lexical structure in parsing long-distance dependencies. *Journal of Psycholinguistic Research*, 18, 1, 37-50.

Traxler, M. J. and Pickering, M. J. (1996). Plausibility and the Processing of Unbounded Dependencies: An Eye-Tracking Study. *Journal of Memory and Language*, 35, 3, 454.

Wagers, M. and Phillips, C. (2009). Multiple dependencies and the role of the grammar in real-time comprehension. *Journal of Linguistics*, 45, 395-433.

Warren, T. and Gibson, E. (2002). The influence of referential processing on sentence complexity. *Cognition*, 85, 79-112.

(6) Table 1: A full sample set of stimuli from the self-paced reading experiment. The critical NP inside a relative clause is underlined.

a.   *Genitive/Gender Match*
     His managers revealed that the studio that notified <u>Jeffrey Stewart</u> about the new film selected a novel for the script, but Annie did not seem to be interested in this information.
b.   *Genitive/Gender Mismatch*
     Her managers revealed that the studio that notified <u>Jeffrey Stewart</u> about the new film selected a novel for the script, but Annie did not seem to be interested in this information.
c.   *Nominative/Gender Match*
     He revealed that the studio that notified <u>Jeffrey Stewart</u> about the new film selected a novel for the script, but Andy did not know which one.
d.   *Nominative/Gender Mismatch*
     She revealed that the studio that notified <u>Jeffrey Stewart</u> about the new film selected a novel for the script, but Annie did not know which one.

Figure 1: The structure of the example (2): An illicit dependency between the wh-phrase and the gap (indicated by t) spans over an IP-node, an NP node and another IP node.
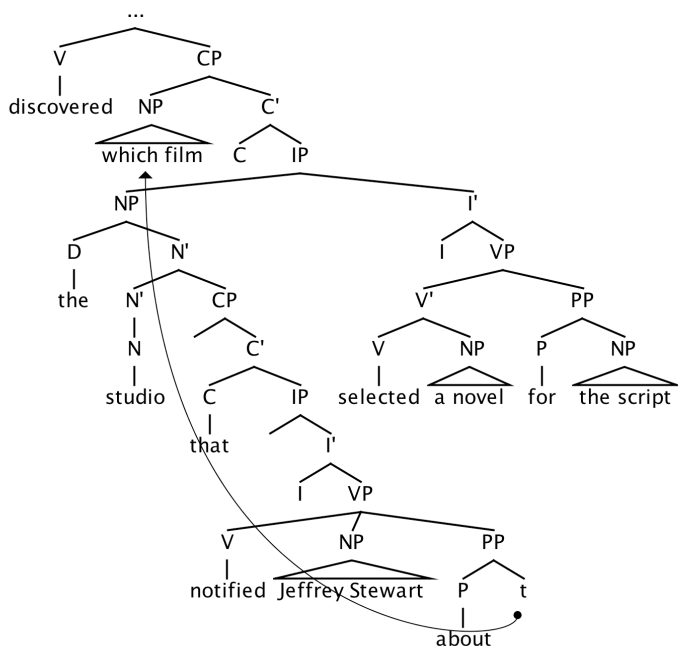

Figure 2: The structure of the example (4): A licit dependency between the pronoun (his) and its antecedent (Jeffrey Stewart) that spans over an IP-node, an NP-node and another IP node.

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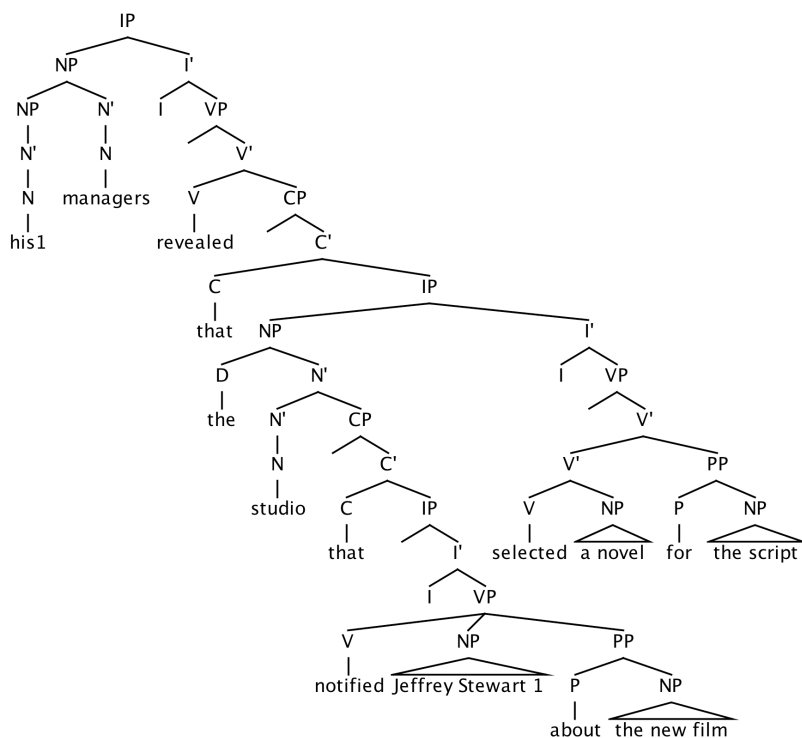
Figure 3: The mean reading times for each region for all conditions are shown in Figure 3. The box on the graph highlights the critical relative clause. The arrow points to the direct object in the relative clause at which the gender mismatch effect was found in the Genitive pair only.
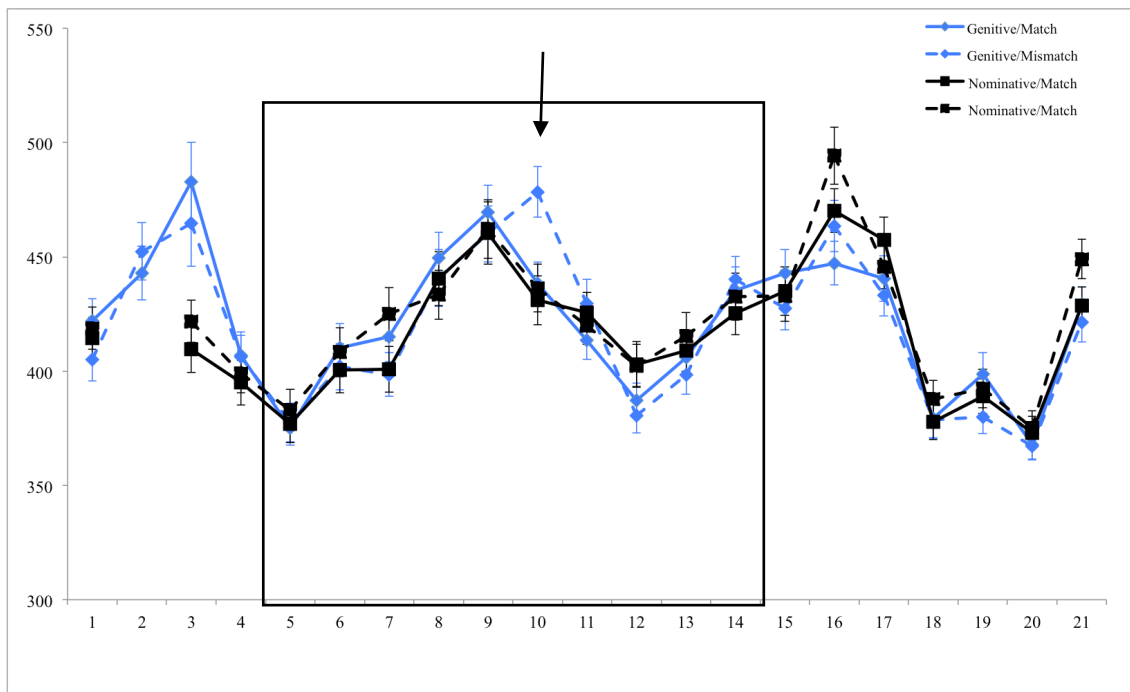
His[1] (her[1]) / managers[2] [Genitive conditions]…   *OR*   He[1] (She[1]) [Nominative conditions]…

…revealed[3] / that[4] / the[5] / studio[6] / that[7] / notified[8] / Jeffrey[9] / Stewart[10] / about[11] / the[12] / new[13] / film[14] /

selected[15] / a novel for the script,[16] / but[17] /

Annie[18] / …   OR   Andy (Annie)[18] /…

…did[19] / not[20] / seem to be interested in this information.[21]

The List of Stimuli

1 a His assistants discovered that the magazine that notified Christopher Priest about the screening process hadn't selected the prize-winner yet, but Rachel had already lost interest in the gossip.

1 b Her assistants discovered that the magazine that notified Christopher Priest about the screening process hadn't selected the prize-winner yet, but Rachel had already lost interest in the gossip.

1 c He discovered that the magazine that notified Christopher Priest about the screening process hadn't selected the prize-winner yet, but Thomas had already lost interest in the gossip.

1 d She discovered that the magazine that notified Christopher Priest about the screening process hadn't selected the prize-winner yet, but Rachel had already lost interest in the gossip.

2 a His managers revealed that the studio that notified Jeffrey Stewart about the new film selected a novel for the script, but Annie did not seem to be interested in this information.

2 b Her managers revealed that the studio that notified Jeffrey Stewart about the new film selected a novel for the script, but Annie did not seem to be interested in this information.

2 c He revealed that the studio that notified Jeffrey Stewart about the new film selected a novel for the script, but Andy did not know which one.

2 d She revealed that the studio that notified Jeffrey Stewart about the new film selected a novel for the script, but Annie did not know which one.

3 a His secretaries made clear that the any that reassured Jonathan Horn about the promotion hadn't decided on a meeting date, but Jenny suspected it would be around Christmas.

3 b Her secretaries made clear that the any that reassured Jonathan Horn about the promotion hadn't decided on a meeting date, but Jenny suspected it would be around Christmas.

3 c He made clear that the any that reassured Jonathan Horn about the promotion hadn't decided on a meeting date, but Brandon thought it wasn't unusual.

3 d She made clear that the any that reassured Jonathan Horn about the promotion hadn't decided on a meeting date, but Jenny thought it wasn't unusual.

4 a His agents were certain that the clinic that reassured Gregory Morton about the privacy protection had informed the police, but Margaret didn't believe it.

4 b Her agents were certain that the clinic that reassured Gregory Morton about the privacy protection had informed the police, but Margaret didn't believe it.

4 c He was certain that the clinic that reassured Gregory Morton about the privacy protection had informed the police, but Brandon didn't lain about it.

4 d She was certain that the clinic that reassured Gregory Morton about the privacy protection had informed the police, but Margaret didn't lain about it.

5 a Her colleagues revealed that the firm that consulted Claudia O'Connell about guardianship had been accused of fraud, but Kevin refused to believe the claim.

5	b	His colleagues revealed that the firm that consulted Claudia O'Connell about guardianship had been accused of fraud, but Kevin refused to believe the claim.
5	c	She revealed that the firm that consulted Claudia O'Connell about guardianship had been accused of fraud, but Karen refused to disclose her source.
5	d	He revealed that the firm that consulted Claudia O'Connell about guardianship had been accused of fraud, but Kevin refused to disclose his source.
6	a	Her secretaries noted that the committee that taunted Annabel Hughes about the poor result was rather inconsistent, but Mark dismissed the remark.
6	b	His secretaries noted that the committee that taunted Annabel Hughes about the poor result was rather inconsistent, but Mark dismissed the remark.
6	c	She noted that the committee that taunted Annabel Hughes about the poor result was rather inconsistent, but Mary was not ready to fight with them.
6	d	He noted that the committee that taunted Annabel Hughes about the poor result was rather inconsistent, but Mark was not ready to fight with them.
7	a	Her friends noticed that the group that taunted Mariana Wiggins about the failure of the project attacked current political activities, but Bruce couldn't see the reason.
7	b	His friends noticed that the group that taunted Mariana Wiggins about the failure of the project attacked current political activities, but Bruce couldn't see the reason.
7	c	She noticed that the group that taunted Mariana Wiggins about the failure of the project attacked current political activities, but Beth couldn't see the reason.
7	d	He noticed that the group that taunted Mariana Wiggins about the failure of the project attacked current political activities, but Bruce couldn't see the reason.
8	a	Her admirers made it clear that the TV-any that contacted Caroline Jarvis about the news program had been criticized after the show, but Gerry was secretly quite glad about it.
8	b	His admirers made it clear that the TV-any that contacted Caroline Jarvis about the news program had been criticized after the show, but Gerry was secretly quite glad about it.
8	c	She made it clear that the TV-any that contacted Caroline Jarvis about the news program had been criticized after the show, but Maria was secretly quite glad about it.
8	d	He made it clear that the TV-any that contacted Caroline Jarvis about the news program had been criticized after the show, but Gerry was secretly quite glad about it.
9	a	His officemates weren't clear that the agency that interrogated George Monroe about expense statements had future expansion plans, but Marianne was certain about it.
9	b	Her officemates weren't clear that the agency that interrogated George Monroe about expense statements had future expansion plans, but Marianne was certain about it.
9	c	He wasn't clear that the agency that interrogated George Monroe about expense statements had future expansion plans, but Nicholas had to pretend he was certain.
9	d	She wasn't clear that the agency that interrogated George Monroe about expense statements had future expansion plans, but Marianne had to pretend she was certain.
10	a	Her mates were certain that the restaurant that reminded Nicole Jones about a baking course will change locations soon, but Andrew was not aware of that.

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10	b	His mates were certain that the restaurant that reminded Nicole Jones about a baking course will change locations soon, but Andrew was not aware of that.
10	c	She was certain that the restaurant that reminded Nicole Jones about a baking course will change locations soon, but Sylvia decided not to mention that.
10	d	He was certain that the restaurant that reminded Nicole Jones about a baking course will change locations soon, but Andrew decided not to mention that.
11	a	His fellows disclosed that the theatre that upset Anthony McAvoy about a play adaptation was going bankrupt, but Susan pretended not to hear this information.
11	b	Her fellows disclosed that the theatre that upset Anthony McAvoy about a play adaptation was going bankrupt, but Susan pretended not to hear this information.
11	c	He disclosed that the theatre that upset Anthony McAvoy about a play adaptation was going bankrupt, but James pretended not to know the information source.
11	d	She disclosed that the theatre that upset Anthony McAvoy about a play adaptation was going bankrupt, but Susan pretended not to know the information source.
12	a	Her managers were uncertain that the program that embarrassed Charlotte Miller with a dirty joke was funded with public money, yet Arthur thought that it didn't matter.
12	b	His managers were uncertain that the program that embarrassed Charlotte Miller with a dirty joke was funded with public money, yet Arthur thought that it didn't matter.
12	c	She was uncertain that the program that embarrassed Charlotte Miller with a dirty joke was funded with public money, yet Judy thought that it was inappropriate anyway.
12	d	He was uncertain that the program that embarrassed Charlotte Miller with a dirty joke was funded with public money, yet Arthur thought that it was inappropriate anyway.
13	a	His supporters kept it secret that the court that interrogated Patrick Maloney about a legal ban had always been controversial, but Theresa knew about it anyway.
13	b	Her supporters kept it secret that the court that interrogated Patrick Maloney about a legal ban had always been controversial, but Theresa knew about it anyway.
13	c	He kept it secret that the court that interrogated Patrick Maloney about a legal ban had always been controversial, but Douglas had to deal with it anyway.
13	d	She kept it secret that the court that interrogated Patrick Maloney about a legal ban had always been controversial, but Theresa had to deal with it anyway.
14	a	Her team-partners announced that the school that reminded Susannah Johnson about an annual conference was highly rated, but Edward denied it.
14	b	His team-partners announced that the school that reminded Susannah Johnson about an annual conference was highly rated, but Edward denied it.
14	c	She announced that the school that reminded Susannah Johnson about an annual conference was highly rated, but Monica did not mention the exact rating.
14	d	He announced that the school that reminded Susannah Johnson about an annual conference was highly rated, but Edward did not mention the exact rating.
15	a	His neighbors were dubious that the council that annoyed Richard Field about a tax policy had obeyed the law, yet Nadine submitted the tax forms.
15	b	Her neighbors were dubious that the council that annoyed Richard Field about a tax policy had obeyed the law, yet Nadine submitted the tax forms.

15	c	He was dubious that the council that annoyed Richard Field about a tax policy had obeyed the law, yet Michael submitted the tax forms.
15	d	She was dubious that the council that annoyed Richard Field about a tax policy had obeyed the law, yet Nadine submitted the tax forms.
16	a	Her sponsors didn't know that the museum that angered Karen Manfred about an art survey had free admission, but Phillip did not raise any complaints about it.
16	b	His sponsors didn't know that the museum that angered Karen Manfred about an art survey had free admission, but Phillip did not raise any complaints about it.
16	c	She didn't know that the museum that angered Karen Manfred about an art survey had free admission, but Rachel wouldn't change her opinion anyway.
16	d	He didn't know that the museum that angered Karen Manfred about an art survey had free admission, but Phillip wouldn't change his opinion anyway.
17	a	His colleagues kept it quiet that the magazine that paid Stephen Mills for the travel adventures was about to be published, but Laura knew it anyway.
17	b	Her colleagues kept it quiet that the magazine that paid Stephen Mills for the travel adventures was about to be published, but Laura knew it anyway.
17	c	He kept it quiet that the magazine that paid Stephen Mills for the travel adventures was about to be published, but David did share the rest of the news.
17	d	She kept it quiet that the magazine that paid Stephen Mills for the travel adventures was about to be published, but Laura did share the rest of the news.
18	a	His friends didn't know that the council that informed William Slater about building regulations had been dismissed, although Zoe had mentioned this several times.
18	b	Her friends didn't know that the council that informed William Slater about building regulations had been dismissed, although Zoe had mentioned this several times.
18	c	He didn't know that the council that informed William Slater about building regulations had been dismissed, but Tom couldn't care less.
18	d	She didn't know that the council that informed William Slater about building regulations had been dismissed, but Zoe couldn't care less.
19	a	Her associates stated that the union that advised Marjorie Davis about the labor agreement boycotted the local elections, but Eric suspected that this was a lie.
19	b	His associates stated that the union that advised Marjorie Davis about the labor agreement boycotted the local elections, but Eric suspected that this was a lie.
19	c	She stated that the union that advised Marjorie Davis about the labor agreement boycotted the local elections, but Jill refrained from making any further comments.
19	d	He stated that the union that advised Marjorie Davis about the labor agreement boycotted the local elections, but Eric refrained from making any further comments.
20	a	His investors were certain that the panel that scolded Russell Picton about a lack of imagination were misled by superficial details, but Kate strongly doubted this.
20	b	Her investors were certain that the panel that scolded Russell Picton about a lack of imagination were misled by superficial details, but Kate strongly doubted this.
20	c	He was certain that the panel that scolded Russell Picton about a lack of imagination were misled by superficial details, but Marc doubted that an appeal would be successful.

20	d	She was certain that the panel that scolded Russell Picton about a lack of imagination were misled by superficial details, but Kate doubted that an appeal would be successful.
21	a	Her trainers announced that the team that teased Christine Lloyd about the unsuccessful performance should be publicly reprimanded, but Brian thought that the circumstances required further investigation.
21	b	His trainers announced that the team that teased Christine Lloyd about the unsuccessful performance should be publicly reprimanded, but Brian thought that the circumstances required further investigation.
21	c	She announced that the team that teased Christine Lloyd about the unsuccessful performance should be publicly reprimanded, but Megan feared that such a view was unpopular.
21	d	He announced that the team that teased Christine Lloyd about the unsuccessful performance should be publicly reprimanded, but Brian feared that such a view was unpopular.
22	a	Her managers didn't reveal that the magazine that interviewed Bethany Hobbes about the world tour never published the article, so Jeffrey had to urgently deal with the situation.
22	b	His managers didn't reveal that the magazine that interviewed Bethany Hobbes about the world tour never published the article, so Jeffrey had to urgently deal with the situation.
22	c	She didn't reveal that the magazine that interviewed Bethany Hobbes about the world tour never published the article, but Joanne did mention that there were some complications.
22	d	He didn't reveal that the magazine that interviewed Bethany Hobbes about the world tour never published the article, but Jeffrey did mention that there were some complications.
23	a	Her parents made it clear that the board that scolded Margaret Atkins about improper clothes would soon face a lawsuit, but Bill doubted that this would ever happen.
23	b	His parents made it clear that the board that scolded Margaret Atkins about improper clothes would soon face a lawsuit, but Bill doubted that this would ever happen.
23	c	She made it clear that the board that scolded Margaret Atkins about improper clothes would soon face a lawsuit, but Jane didn't name an exact date.
23	d	He made it clear that the board that scolded Margaret Atkins about improper clothes would soon face a lawsuit, but Bill didn't name an exact date.
24	a	His auditors knew that the agency that advised Alistair Smith about organizing a fundraiser would undergo major restructuring, yet Liz thought it was not a problem.
24	b	Her auditors knew that the agency that advised Alistair Smith about organizing a fundraiser would undergo major restructuring, yet Liz thought it was not a problem.
24	c	He knew that the agency that advised Alistair Smith about organizing a fundraiser would undergo major restructuring, yet Jim kept it secret.
24	d	She knew that the agency that advised Alistair Smith about organizing a fundraiser would undergo major restructuring, yet Liz kept it secret.
25	a	His spokespersons revealed that the jury that cautioned Sebastian Galway against hasty actions stepped down, but Jill knew that this information hadn't been verified.

25	b	Her spokespersons revealed that the jury that cautioned Sebastian Galway against hasty actions stepped down, but Jill knew that this information hadn't been verified.
25	c	He revealed that the jury that cautioned Sebastian Galway against hasty actions stepped down, but Mike refrained from any other details.
25	d	She revealed that the jury that cautioned Sebastian Galway against hasty actions stepped down, but Jill refrained from any other details.
26	a	His lawyers were certain that the crew that teased Benjamin Simmons about improper manners would be penalized, but Mary did not share their confidence.
26	b	Her lawyers were certain that the crew that teased Benjamin Simmons about improper manners would be penalized, but Mary did not share their confidence.
26	c	He was certain that the crew that teased Benjamin Simmons about improper manners would be penalized, but Jack didn't know how strict the punishment would be.c9
26	d	She was certain that the crew that teased Benjamin Simmons about improper manners would be penalized, but Mary didn't know how strict the punishment would be.c9
27	a	Her subordinates disclosed that the consulate that informed Marianne Welby about counterfeit documents had suspected a fraud, but Scott wondered whether that was a false pretext.
27	b	His subordinates disclosed that the consulate that informed Marianne Welby about counterfeit documents had suspected a fraud, but Scott wondered whether that was a false pretext.
27	c	She disclosed that the consulate that informed Marianne Welby about counterfeit documents had suspected a fraud, but Sheila avoided specific accusations.
27	d	He disclosed that the consulate that informed Marianne Welby about counterfeit documents had suspected a fraud, but Scott avoided specific accusations.
28	a	His students found out that the authorities that consulted James Hamilton about educational policy hadn't prepared for the meeting, but Jane was not at all surprised.
28	b	Her students found out that the authorities that consulted James Hamilton about educational policy hadn't prepared for the meeting, but Jane was not at all surprised.
28	c	He found out that the authorities that consulted James Hamilton about educational policy hadn't prepared for the meeting, but Bill was not at all surprised.
28	d	She found out that the authorities that consulted James Hamilton about educational policy hadn't prepared for the meeting, but Jane was not at all surprised.