An Experimental Investigation of the Semantics and Pragmatics of Specificity

Tania Ionin
University of Illinois at Urbana-Champaign

1. Introduction

There are many different theories of specificity in the semantic literature. These include specificity as scope (Ioup 1977, among others), specificity as referentiality (Fodor and Sag 1982), specificity as a choice function reading (Reinhart 1997, Winter 1997, Kratzer 1998, among many others), and specificity as speaker identifiability (Groenendijk & Stokhof 1980). Importantly, theories of specificity often rely on fairly subtle judgments. This is particularly true when it comes to *a certain*-indefinites, a type of specific indefinite that has been much investigated in the theoretical literature (e.g., Hintikka 1986, Kratzer 1998, Schwarz 2001, Farkas 2002, among many others).

The goal of this paper is to examine the behavior of *a certain*-indefinites experimentally, in order to provide evidence for or against particular semantic theories. The main study reported in this paper examines the semantics of *a certain*-indefinites, taking as its starting point is the proposal of Schwarz (2001) that *a certain*-indefinites and *a*-indefinites are derived through different semantic mechanisms. A secondary, pilot study reported in the Appendix examines the pragmatics of *a certain*-indefinites, probing the requirement of identifiability (cf. Farkas 2002). Both studies use context-based interpretation tasks with linguistically naïve informants. The findings provide support for existing theories, but also raise further questions concerning the interpretation of English indefinites.[1]

2. Semantics of *a certain*-indefinites
2.1. Long-distance readings of indefinites

It is well-known that both *a*-indefinites and *a certain*-indefinites, unlike regular quantifiers, can scope out of islands such as *that*-clauses and *if*-clauses, resulting in long-distance readings (cf. Fodor and Sag 1982, and much subsequent literature). Thus, both sentences in (1) can have the (simplified) logical form in (2a). At the same time, *a certain*-indefinites may not scope *within* the island: the logical form in (2b) is available for *a*-indefinites only. This is part of a more general restriction on *a certain*-indefinites, which obligatorily take wide scope over intensional and modal operators (cf. Hornstein 1984, Hintikka 1986, among others).

(1)　a.　Dr. Smith thinks that a student will fail the exam.
　　　b.　Dr. Smith thinks that a certain student will fail the exam.

(2)　a.　Widest scope (long-distance) reading: available for (1a) and (1b)
　　　　　∃y [y is a student & Dr. Smith thinks that y will fail the exam]

　　　b.　Narrow scope (local) reading: available for (1a), but not for (1b)
　　　　　Dr. Smith thinks that ∃y [y is a student and y will fail the exam].

The possible readings of indefinites are not limited to widest and narrowest scope: there has been much literature showing that English indefinites also have intermediate scope readings, on which they

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[1] To the best of my knowledge, there have not been prior experimental studies investigating the behavior of *a certain*-indefinites in English; but see Martí (2007), Alonso-Ovalle and Benito (submitted), on experimental investigations of indefinites in Spanish.

scope out of scope islands but underneath higher quantifiers (Farkas 1981, Ruys 1992, Abusch 1994, Reinhart 1997, Winter 1997, Kratzer 1998). This is illustrated by the sentences in (3), and the corresponding logical forms in (4).

(3)   a.   Every professor thinks that a student will fail the exam.
      b.   Every professor thinks that a certain student will fail the exam.

(4)   a.   Widest-scope reading: available for (3a-b)
           $\exists y$ [y is a student & $\forall x$ [x is a professor $\rightarrow$ x thinks that y will fail the exam]]

      b.   Intermediate scope reading: available for (3a-b)
           $\forall x$ [x is a professor $\rightarrow$ $\exists y$ [y is a student & x thinks that y will fail the exam]]

      c.   Narrow scope reading: available for (3a) but not (3b)
           $\forall x$ [x is a professor $\rightarrow$ x thinks that $\exists y$ [y is a student & y will fail the exam]]

Consider the scenario in (5). In the context of this scenario, the sentences in (3) are false on the widest-scope reading of the indefinite (4a), as there is no one student that all professors expect to fail, yet true on the intermediate-scope reading of the indefinite (4b), on which the students vary with the professors. The sentences are also true on the narrow-scope reading of the indefinite (4c), since the intermediate-scope reading entails the narrow-scope reading. But given that the narrow-scope reading (4c) is unavailable for *a certain*-indefinites, if the sentence in (3b) is judged to be true in the context of (5), this would indicate the availability of intermediate-scope readings (4b) for *a certain*-indefinites.

(5)   Every professor has one student in his or her class who is a really terrible student, a student that the professor is sure will fail the qualifying exam that all students in this department have to pass. For instance, Dr. Smith thinks that Sarah will fail the exam, Dr. Johnson expects Roger to fail, and Dr. Chung is sure that Chris will fail. Interestingly, all of the professors expect different students to fail.

2.2. *Choice function analyses*

An influential approach to deriving the long-distance readings of indefinites analyzes them in terms of *choice functions* (Winter 1997, Reinhart 1997, Kratzer 1998, and much subsequent literature; for a different approach, see Schwarzschild 2002 on implicit domain restriction). On this approach, the indefinite determiner is translated into a variable that ranges over choice functions (CFs), which map any non-empty set in their domain to a member of this set. Two major variants of the CF approach are the "existentially closed CF" approach (Reinhart 1997, Winter 1997), and the "contextually determined CF" approach (Kratzer 1998).[2]

Consider again the sentences in (3). On the "existentially closed CF" approach, the CF can be closed at the topmost level, deriving the widest-scope reading of the indefinite (6a), or below the higher quantifier, deriving the intermediate-scope reading (6b).

(6)   Existentially closed CF:
      a.   widest scope of indefinite:
           $\exists f$ [[every professor] λ_1 [t_1 thinks that f(student) will fail the exam]]
      b.   intermediate scope of indefinite:
           [[every professor] λ_1 $\exists f$ [t_1 thinks that f(student) will fail the exam]]

In contrast, on the "contextually determined CF" approach, the widest-scope reading of the indefinite is derived through a pragmatically determined function that picks a particular student (a student the speaker has in mind) from the set of students (7a). The intermediate scope reading is derived via a Skolem function, which maps individuals to CFs (cf. Kratzer 1998, Matthewson 1999,

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[2] There are furthermore multiple variants of each approach (for instance, the topmost existential closure approach of Matthewson 1999), which it is beyond the scope of this paper to discuss.

Chierchia 2001, Schwarz 2001). A Skolemized CF bears a Skolem index which is bound by a higher quantifier (7b).

(7) Contextually determined CF *(the subscript $_s$ stands for "speaker")*
   a. widest scope of indefinite:
      [[every professor] λ_1 [t_1 thinks that f_s(student) will fail the exam]]
   b. intermediate scope of indefinite:
      [[every professor] λ_1 [t_1 thinks that f_s^1(student) will fail the exam]]

For sentences such as (3), the two CF approaches described above work equally well: both approaches successfully capture the availability of widest-scope and intermediate-scope readings.[3] However, as shown by Chierchia (2001) and Schwarz (2001), the two types of analyses make different predictions when the indefinite is in the scope of a downward monotone quantifier, as shown in (8).

The fact that the indefinite in (8a) contains a pronoun bound by the higher quantifier rules out the widest-scope reading of the indefinite. On the "existentially closed CF" approach, the only available reading of the indefinite is equivalent to a narrow-scope reading: on the LF in (8b), (8a) can be paraphrased as "No girl talked with *any* teacher of hers".[4] In contrast, on the "contextually determined CF" approach, the indefinite has a true functional reading: on the LF in (8c), (8a) can be paraphrased as "No girl talked with a teacher of hers who is in a particular functional relationship to her". Such a functional relationship is brought out by the scenario in (9).

(8) a. No girl$_1$ talked with a (certain) teacher of hers$_1$.
   b. existentially closed CF: [no girl] λ_1 [$\exists f$ [t_1 talked with f(teacher of hers$_1$)]]
   c. contextually determined CF: [no girl] λ_1 [t_1 talked with f_s^1(teacher of hers$_1$)]

The question, of course, is whether the functional reading in (8c) is in fact available in sentences such as (8a). Schwarz (2001) argues that it is available for *a certain*-indefinites, but not for *a*-indefinites, which have only the narrow-scope reading in (8b) available to them. Schwarz thus predicts that given the scenario in (9), (9a), with an *a*-indefinite, should be false (it is false that no girl talked with *any* teacher of hers), while (9b), with an *a certain*-indefinite, should be true (since for each girl, there is a particular teacher – the one who gave her a bad grade – that she didn't talk to).

(9) At the party in this girls' school, each student made great efforts to avoid the teacher that had given her a bad grade. Different students were avoiding different teachers: for example, Helen made sure not to talk to Mr. Loe, while she did talk to all the other teachers; on the other hand, Janet talked to Mr. Loe just fine, but made sure to avoid Ms. Jenkins. And so on for the other students.
   a. No girl$_1$ talked with a teacher of hers$_1$. → false
   b. No girl$_1$ talked with a certain teacher of hers$_1$. → true

On the basis of the different interpretations of sentences such as (9a) vs. (9b) (and corresponding sentences with long-distance indefinites), Schwarz (2001) proposes that *a certain*-indefinites and *a*-indefinites are derived through different mechanisms: while *a certain*-indefinites are derived via contextually determined CFs, with the possibility of Skolemization, *a*-indefinites are derived through a purely semantic mechanism, such as existentially closed CFs or long-distance scope-shifting.

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[3] The existentially closed CF approach can also capture the narrow-scope readings of indefinites, through local existential closure (Winter 1997). Alternatively, narrow-scope indefinites can be viewed as quantificational (Reinhart 1997, Kratzer 1998), with the choice function analysis reserved for long-distance indefinites. The lack of narrow-scope readings of *a certain*-indefinites then indicates that *a certain*-indefinites cannot be quantificational (cf. Fodor and Sag 1982).

[4] See Chierchia (2001), Schwarz (2001) for evidence that the CF and its existential closure cannot be separated by a quantifier binding into the indefinite – i.e., topmost existential closure above *no girl* does not yield the right reading (the *Integrity Condition*).

3. Hypotheses and predictions

The goal of the present study is to experimentally test linguistically naïve informants' judgments of the interpretation of *a certain*-indefinites and *a*-indefinites. First, following the consensus in the literature, I hypothesize that both *a*-indefinites and *a certain*-indefinites have long-distance readings available to them, and that *a certain*-indefinites may not take narrow scope under an intensional or modal operator. This gives rise to Prediction A below:

(10) <u>Prediction A: behavior of indefinites in scope islands</u>
      Native speakers will allow both *a*-indefinites and *a certain*-indefinites to escape scope islands: both types of indefinites will be accepted with long-distance readings, widest-scope (4a) as well as intermediate-scope (4b). In contrast, only *a*-indefinites, and not *a certain*-indefinites, will be allowed to have local (narrow-scope) readings inside the island (4c).

Second, following Schwarz (2001), I hypothesize that the long-distance readings of *a certain*-indefinites and *a*-indefinites are derived through different mechanisms: *a certain*-indefinites are derived through contextually determined CFs, a semantic mechanism with pragmatic restrictions, while *a*-indefinites are derived through a purely semantic mechanism, such as existentially closed CFs. This hypothesis gives rise to Prediction B:

(11) <u>Prediction B: the availability of functional readings</u>
      When an indefinite occurs in the scope of a downward monotone quantifier, native speakers will interpret *a certain*-indefinites and *a*-indefinites differently: *a certain*-indefinites will have functional readings, as in (8c), while *a*-indefinites will have narrow-scope readings, as in (8b).

4. Methods
4.1. Participants and procedure

The participants in this study were 40 native English speakers, undergraduate students at a large U.S. university. They were linguistically naïve informants, recruited from general education courses in linguistics, and had no prior exposure to formal semantics.[5] The participants completed a language background questionnaire and the test instrument described below, both of which were placed online. Participants were provided with the url of the test, and completed the test on their own. They received course extra credit for their participation.

4.2. Test instrument

The online interpretation task consisted of 52 story-sentence pairs. The participants were asked to judge the target sentence as appropriate or inappropriate in the context of the story, by selecting either YES or NO. There were two test versions, each administered to 20 participants. Each test version consisted of 32 test items (22 targeting the YES response, and 10 targeting the NO response) and 20 filler items (four targeting the YES response, and 16 targeting the NO response).

For the test items, there were two conditions: a condition in which the target sentence contained an *a*-indefinite, and a condition in which it contained an *a certain*-indefinite. The indefinite always occurred in object position, and the preceding story was designed to match the widest scope, intermediate scope, narrow scope, or functional reading of the indefinite. There were eight test categories in total, and each test version contained four tokens of each category, two tokens per condition. The test was fully counterbalanced across the two versions, so that each participant saw each test item in only one condition. The fillers, which were the same across both test versions, tested the interpretation of anaphors, and were identical in format to the test items.

In this paper, I focus on six of the eight test categories: three categories of type U, with a phrase containing a universal quantifier (*every*) in subject position, and three categories of type N, with a

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phrase containing a negative quantifier (*no*) in subject position.[6] Examples of test scenarios for these six categories are given in (12) through (17) below, along with the two types of target sentences and the predicted responses for each. Note that the target sentences in categories N2 and N3, but not the other categories, contained a bound variable inside the indefinite.

(12) U1: context matches widest scope reading of indefinite
    Roger is a terrible student, the worst in this department. All of the professors in this department are sure that Roger will fail the difficult qualifying exam.
    a. Every professor thinks that a student will fail the exam.   YES
    b. Every professor thinks that a certain student will fail the exam. YES

(13) U2: context matches intermediate scope reading of indefinite
    Every professor has one student in his or her class who is a really terrible student, a student that the professor is sure will fail the qualifying exam that all students in this department have to pass. For instance, Dr. Smith thinks that Sarah will fail the exam, Dr. Johnson expects Roger to fail, and Dr. Chung is sure that Chris will fail. Interestingly, all of the professors expect different students to fail.
    a. Every professor thinks that a student will fail the exam.   YES
    b. Every professor thinks that a certain student will fail the exam. YES

(14) U3: context matches narrow scope reading of indefinite
    The professors in this department make the qualifying exam a very difficult one. Every professor is sure that at least one student will fail this exam, although none of them know exactly which students will pass and which students will fail.
    a. Every professor thinks that a student will fail the exam.   YES
    b. Every professor thinks that a certain student will fail the exam. NO

(15) N1: context matches wide scope reading of indefinite
    Mr. Clark is not a very popular teacher. The students tend to avoid him outside of class. So at the school party, Mr. Clark stood by himself while the other teachers talked with students. But not a single student came to talk to Mr. Clark.
    a. No student talked with a teacher.   YES
    b. No student talked with a certain teacher.   YES

(16) N2: context matches functional reading of indefinite
    At the party in this girls' school, each student made great efforts to avoid the teacher that had given her a bad grade. Different students were avoiding different teachers: for example, Helen made sure not to talk to Mr. Loe, while she did talk to all the other teachers; on the other hand, Janet talked to Mr. Loe just fine, but made sure to avoid Ms. Jenkins. And so on for the other students.
    a. No student talked with a teacher of hers.   NO
    b. No student talked with a certain teacher of hers.   YES

(17) N3: context matches narrow scope reading of indefinite
    The boys from the Wade family were having problems with their schoolwork. Their teachers tried for a long time to talk to them about their performance. However, the Wade boys, from the oldest to the youngest, made sure to avoid their teachers. They didn't come to talk to their teachers.
    a. No boy talked with a teacher of his.   YES
    b. No boy talked with a certain teacher of his.   NO

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[6] The other two categories, not discussed here, contained a proper name in subject position; the target sentences for these two categories were of the type exemplified in (1), and examined only wide and narrow scope readings, without the possibility of intermediate scope. The results for these test categories were nearly identical to the results for categories U1 and U3 described above, which similarly targeted wide and narrow scope readings.

5. Results and discussion

5.1. Results for type U contexts

The mean results for the three test categories of type U are reported in Table 1. The percentages correspond to the percentage of YES responses; thus, higher percentages indicate more frequent YES responses, while lower percentages indicate more frequent NO responses. The table also includes the corresponding example numbers and predicted responses for each cell. A repeated-measures ANOVA was performed on the results, with determiner type (*a* vs. *a certain*) and context (widest scope vs. intermediate scope vs. narrow scope) as the within-subjects variables, and test version (1 vs. 2) as the between-subjects variable. There was a significant effect of determiner type ($F (1, 38) = 84$, $p < .001$), a significant effect of context ($F (2,76) = 35$, $p < .001$), and a significant interaction between the two ($F (2, 76) = 42$, $p < .001$): as seen in Table 1, the context affected judgments of *a certain*-indefinites, but not judgments of *a*-indefinites.[7]

Table 1. Mean results for type U categories (% corresponds to %YES)

context \ indefinite	U1 (wide scope indefinite)	U2 (intermediate scope indefinite)	U3 (narrow scope indefinite)
a-indefinite	(12a): YES result: **93%**	(13a): YES result: **96%**	(14a): YES result: **99%**
a certain-indefinite	(12b): YES result: **98%**	(13b): YES result: **74%**	(14b): NO result: **31%**

The results in Table 1 are largely consistent with Prediction A in (10). Both *a certain*-indefinites and *a*-indefinites are accepted with widest-scope and intermediate scope readings, while *a*-indefinites are accepted to a much greater extent than *a certain*-indefinites with narrow scope readings. The only part of the results not fully consistent with Prediction A is the 74% acceptance rate for *a certain*-indefinites with intermediate scope readings, much lower than the corresponding figure (96%) for *a*-indefinites. However, this apparent discrepancy is in fact quite consistent with Schwarz's (2001) proposal, as follows.

In the case of *a certain*-indefinites, widest-scope and intermediate-scope readings are derived in slightly different ways: only the latter require Skolemization. While Skolemization is a semantic mechanism, its availability is pragmatically determined, depending as it does on the presence of a salient functional relationship (e.g., between professors and students in (13)). The variability in acceptance of the intermediate-scope readings of *a certain*-indefinites is thus attributed to pragmatics: speakers may not accept this reading when the context does not make the functional relationship sufficiently salient. In contrast, for *a*-indefinites, intermediate scope readings, just like widest-scope readings, result from a purely semantic operation (such as existential closure of the CF): no pragmatics-dependent mechanism is involved, so intermediate scope readings are as easy to obtain as widest-scope ones.

5.2. Results for Type N contexts

The mean results for the three test categories of type N are reported in Table 2. A repeated-measures ANOVA was performed on the results, with determiner type (*a* vs. *a certain*) and context (wide scope vs. functional reading vs. narrow scope) as the within-subjects variables, and test version (1 vs. 2) as the between-subjects variable. There was a significant effect of determiner type ($F (1, 38) = 43$, $p < .001$), a significant effect of context ($F (2, 76) = 47$, $p < .001$), and a significant interaction between the two ($F (2, 76) = 45$, $p < .001$): as seen in Table 2, *a certain*-indefinites were accepted at

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[7] There was no significant main effect of test version, but test version interacted significantly with determiner type: sentences with *a certain*-indefinites elicited YES responses more frequently in version 2 than in version 1, while *a*-indefinites were treated similarly across the two versions. Importantly, the patterns reported in Table 1 held for both test versions.

the highest rate in wide-scope contexts, while *a*-indefinites were accepted at the highest rate in narrow-scope contexts.[8]

Table 2. Mean results for type N categories (% corresponds to %YES)

context indefinite	N1 (wide scope indefinite)	N2 (functional indefinite)	N3 (narrow scope indefinite)
a-indefinite	(15a): YES result: **28%**	(16a): NO result: **14%**	(17a): YES result: **94%**
a certain-indefinite	(15b): YES result: **80%**	(16b): YES result: **54%**	(17b): NO result: **65%**

The results in Table 2 are less straightforward than those in Table 1. The middle column, on functional readings, provides support for Prediction B in (11): functional readings are clearly accepted for *a certain*-indefinites to a much greater extent than for *a*-indefinites, exactly as Schwarz's (2001) proposal predicts. While the 54% acceptance rate of functional readings for *a certain*-indefinites seems fairly low, it is likely due to the difficulty of establishing a salient functional relationship in the context, as described in the previous section. Importantly, for *a*-indefinites, the functional reading is simply unavailable, not just difficult to obtain, as shown by the 14% acceptance rate.

The behavior of *a certain*-indefinites in narrow-scope contexts, N3, deserves further explanation: while *a certain*-indefinites were predicted to be rejected in this context, they were in fact accepted 65% of the time. This result is most likely due to the entailment relationship between narrow-scope and functional readings in downward monotone contexts. The scenario in (17) was designed to match the narrow-scope reading of the indefinite: no boy talked to *any* teacher of his. However, it follows that if no boy talked to any teacher of his, then no boy talked to a teacher of his who is in a particular functional relationship to him. Thus, if *a certain teacher of his* is interpreted as a functional indefinite (per Schwarz 2001) in (17b), the sentence is not actually false in the context, and hence is not rejected. (It is, however, infelicitous, since the context does not provide a possible functional relationship).

Finally, let us consider the responses to category N1, where the context matches the widest-scope reading of the indefinite. While *a certain*-indefinites were accepted in this context, as expected, *a*-indefinites were unexpectedly rejected (the acceptance rate was only 28%). It appears that when informants read the context in (15), followed by the sentence in (15a), they interpret *a teacher* as a narrow-scope indefinite: they interpret (15a) as meaning that "no student talked to any teacher" (false in this context), rather than as "no student talked to a specific teacher" (true in this context). One might ask why a similar preference for narrow rather than wide scope of *a*-indefinites did not surface in upward monotone contexts such as U1 (12). The answer, once again, is entailment. In (12a), the wide-scope reading of the indefinite entails the narrow-scope reading of the indefinite: if it is true that every professor expects a specific student to fail, then it is also true that every professor expects at least one student to fail. Thus, whatever interpretation informants assign to the *a*-indefinite in (12a), the sentence will be true in the context of the story in (12). In contrast, in (15a), a downward monotone context, the entailment relationship is reversed: the sentence is true on the wide-scope reading but false on the narrow-scope reading, and informants appear to prefer the narrow-scope reading. This interesting finding needs to be explored further. It is not clear whether the wide-scope reading of the *a*-indefinite is entirely unavailable in (15a), or only dispreferred. It is also important to examine informants' judgments of *a*-indefinites in other downward monotone contexts, and to look at the role of modification, since it is known that modification facilitates wide-scope readings (cf. Chierchia 1998).

6. Conclusion

The findings of this study highlight the importance of conducting studies in experimental semantics. First, experimental studies can provide support for or against particular semantic theories: it is important to ensure that the predicted judgments obtain with a sample of linguistically naïve

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[8] There was no significant main effect of test version, but there was a significant three-way interaction between determiner type, scope, and test version. While this interaction is difficult to interpret, I note that the main patterns of responses were similar across the two test versions.

informants. In the case of the present study, the results support Schwarz's (2001) proposal that long-distance readings of *a certain*-indefinites and *a*-indefinites are due to different mechanisms.

Furthermore, experimentally obtained findings can potentially uncover new patterns that need to be examined further and/or accounted for theoretically. The present study has uncovered at least two such patterns – a high level of variability in the acceptance of intermediate-scope and functional readings of *a certain*-indefinites, and a strong preference for the narrow scope readings of unmodified *a*-indefinites. These findings need to be explored in more depth, and have potential implications for the role of pragmatic context in the interpretation of indefinites.

7. Appendix: pragmatic conditions on *a certain*-indefinites

This appendix reports on a separate, pilot study that was conducted to probe the pragmatic conditions on *a certain*-indefinites in more depth. It has been noted in the literature that felicitous use of *a certain*-indefinites requires the condition of identifiability. For example, Abusch and Rooth (1997) proposed that use of "*a certain* X" implies that the question "which X is it?" has an answer. In a similar vein, Farkas (2002) proposed that *a certain*-indefinites require the variable to be identifiable based on a non-trivial identifying property.

The pilot study reported here probed the degree of identifiability required for the felicitous use of *a certain*-indefinites. The following contexts were contrasted: contexts where the identity of the individual under discussion is known to the speaker, and not hidden from the hearer (18a); contexts where it is known to the speaker but hidden from the hearer (18b); contexts where the identity is hidden from the speaker as well as the hearer, but known to someone else in the context (18c); contexts where no one in the context can identify the individual under discussion, but where this individual is inherently identifiable (18d); and contexts where the individual is not inherently identifiable (18e). According to Farkas (2002, 2007), inherent identifiability is sufficient for felicitous use of *a certain*, so (18a-d), but not (18e), are predicted to be felicitous.

(18) a.   The answer to this ancient riddle is contained in a (certain) old document. You can find that document on exhibit at the university museum.

b.   The answer to this ancient riddle is contained in a (certain) old document. I'm not going to tell you what document that is – figure it out yourself.

c.   The answer to this ancient riddle is contained in a (certain) old document. I don't know what document that is, but all I have to do is ask the museum curator.

d.   The answer to this ancient riddle is contained in a (certain) old document. The problem is that no one knows what document that is.

e.   The answer to this ancient riddle is contained in a (certain) old document. It could be any document.

An online test instrument was prepared, with 168 items (88 test items and 80 fillers); each item consisted of a pair of sentences, and participants were asked to judge whether the second sentence was an acceptable continuation of the first, on a scale from 1 to 4 (where 1=unacceptable, 4=acceptable). The test included the five categories illustrated in (18), eight tokens per category – four tokens with *a*-indefinites and four (otherwise identical) tokens with *a certain*-indefinites. The test was administered to 24 native English speakers, college students participating for extra-credit.

The results are given in Table 3. A repeated-measures ANOVA found a significant effect of determiner type ($F (1, 23) = 27$, $p<.001$), a significant effect of identifiability type, ($F (4, 92) = 44$, $p<.001$), and a significant determiner by identifiability interaction ($F (4, 92) = 18$, $p<.001$): determiner type mattered more for the categories in (18d-e) than for the other three categories.

These results show that, consistent with the literature, *a certain*-indefinites require identifiability, while *a*-indefinites do not: the ratings of type (18e) were much lower for *a certain*-indefinites We furthermore see that the identifiability requirement is gradable rather than absolute: sentences of type (18a-c) with *a certain* were rated slightly higher than type (18d), which suggests that native speakers prefer use of "*a certain* X" in sentences where someone in the discourse context can answer the question "which X is it?" (cf. Abusch and Rooth 1997). Yet, consistent with the predictions of Farkas

(2002, 2007), "*a certain* X" is still found fairly felicitous even when no one can answer "which X is it?", as long as there is inherent identifiability (i.e., the question is in principle answerable), as in (18d).

Table 3. Mean sentence ratings (on a scale from 1 to 4)

category	*a*-indefinites: mean rating	*a certain*-indefinites: mean rating	difference between *a* and *a certain*?
(18a) identifiable to speaker & open to hearer	3.6	3.6	non-significant
(18b) identifiable to speaker & hidden from hearer	3.5	3.5	non-significant
(18c) identifiable to a third person	3.6	3.5	non-significant
(18d) inherently identifiable	3.5	3.2	significant (p < .01)
(18e) not inherently identifiable	3.0	2.1	significant (p < .001)

These findings are preliminary, and pose interesting questions for further study, including exactly how inherent identifiability is determined in the discourse, as well as how identifiability plays out with respect to the functional readings of *a certain*-indefinites, described earlier in this paper.

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