

Polar nouns and Polar Concealed Questions

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Revised version of October 2022, to appear in Gardelle, Laure, Elise Mignot and Julie Neveux (eds), *Nouns and the Morphosyntax/Semantics Interface*, Palgrave Macmillan.

Abstract

This paper introduces a hitherto unnoticed type of concealed questions, i.e. polar concealed question readings. Previous research on Concealed Questions has concentrated on NPs corresponding to identity questions (e.g., *Kim knows the price* \approx ‘Kim knows what the price is’). This paper focuses on NPs whose reading is similar to that of a polar interrogative in certain interrogative contexts, e.g., *Their survival is uncertain* \approx ‘Whether or not they have survived is uncertain’. The contexts that allow this reading and the properties of the nouns that allow it are explored. It is shown that the polar reading is licensed in contexts that lack factive presupposition or allow presupposition to be cancelled. It is then shown that central polar nouns, those which can easily get polar readings in interrogative contexts, denote simple eventualities, and are either stative or correlated with a salient state, in their default uses (in non-interrogative contexts). Contextual factors are examined, in particular the possible coercion of polar readings by contextual elements. Possible ambiguities are also discussed, in particular with Degree Concealed Questions, which motivates the hypothesis that the variety of concealed question readings should be reexamined.

Keywords Concealed questions, Polar Nouns, Factive presupposition, Indirect polar interrogatives

0 Introduction

It is often claimed that nouns (e.g., *table*, *chair*, *dog*, ...) typically denote concrete, physical objects (Croft 2000, Langacker 1990, Mihatsch 2009, among others).¹ It is also well established that nouns can denote eventualities, such as states or activities, as in (1), as well as abstract entities, e.g., propositions or facts, as in (2).

- (1) In a recent interview with Danbury News-Times, Paul Rotello recalled his experience attending a Doors concert at Danbury High School on Oct. 11, 1967. (COCA)
- (2) According to this theory, the towers didn’t have cores made up of steel columns, but a conventional concrete core, with the concrete’s rebar being coated with C4. (COCA)

¹Preliminary versions of this paper were presented at the 2017 JeNom conference in Fribourg, at the conference on “Nouns, between Syntax and Semantics” (Paris, 2019) and at the Université de Paris Linglunch in 2021. We would like to thank Bernard Fradin, Jonathan Ginzburg, Pauline Haas, Barbara Hemforth, Richard Huyghe, Louise McNally, Rafael Marin, Lucia Tovenia, as well as two anonymous reviewers, for their comments.

Nouns can thus denote first, second and third order entities in the typology of Lyons 1977, as is well known.

It has also been shown that some nouns can have question-type readings in specific contexts. The properties of these nouns and the contexts favoring the so-called ‘concealed question’ readings illustrated in (3) have been quite extensively studied (see Baker 1968, Grimshaw 1979, Nathan 2006, Frana 2010, Barker 2016, Frana 2017 *inter alia*).

- (3) She told me the time of the meeting. (\approx She told me what the time of the meeting was.)

In this paper, we will focus on a so far overlooked subclass of nouns that can have meanings similar to those of polar interrogatives, as is the case for *survival*, *success*, *presence*, and *participation* in (4) and (5):²

- (4) Mubarak’s survival is impossible to predict and, even if he does, his plan to make his son his heir apparent is now in serious jeopardy. (COCA, cited by Miller and Hemforth 2014)
(\approx Whether or not Mubarak will survive is impossible to predict ...)
- (5) Your success depends on your presence in class and your active participation in class discussions and activities. (iWeb)
(\approx Whether or not you succeed depends on whether or not you are present in class and whether or not you participate actively in class discussions and activities.)

We will call these nouns ‘polar’ nouns, and the specific reading illustrated in (4) and (5) a ‘polar’ reading. We will use the term ‘Polar Concealed Questions’ (PCQs) to refer to NPs headed by a polar noun with a polar reading, for instance, *Mubarak’s survival*, *your success*, *your presence in class*, and *your active participation in class discussions and activities* are all PCQs in the above examples.

The choice of this term should not be taken as a claim that NPs headed by these nouns always have polar readings: in most of their occurrences NPs headed by such nouns denote eventualities (6) or facts (7):

- (6) a. Since the 1980s there has been a categorical increase in the presence of women in various social sectors. (COCA)
b. Trade in wildlife products threatened the survival of jaguars, [...] (COCA)
- (7) a. Especially in the accelerated corrosion test [...] the corrosion of structural steel is accelerated due to the presence of a large amount of H⁺ and Cl^{sup.}– [...] (COCA)
b. I emphasize the survival of reformist rhetoric because [...] (COCA)

As we will show in section 2, the polar reading is restricted to (or triggered by) specific contexts. Now it is important to note that most nouns do not allow such polar readings in similar contexts. Compare (4) to (8):

- (8) Mubarak’s answer is impossible to predict.

²Our examples of polar nouns in this study are mostly naturally occurring data. They are taken from corpora, in particular the COCA corpus (Davies 2008-) and iWeb corpus (Davies 2018), except for a few cases where we have used other sources. The richer context offered by these ecologically realistic examples makes the relevant readings much clearer. In order to help the reader zoom in on the relevant NP in these somewhat more complex examples, we systematically underline the relevant head noun.

- (≈ ‘What Mubarak will answer is impossible to predict.’)
 (≠ ‘Whether or not Mubarak will answer is impossible to predict.’)

The main aim of this paper is then to establish the conditions under which nouns can have such ‘polar’ readings. Which nouns allow them? In which contexts? But before addressing these issues, it will be useful to review the classical notion of ‘concealed questions’ and compare them with polar nouns in PCQs.

1 Concealed questions

It has been accepted since Baker 1968 and Grimshaw 1979 that certain NPs, known as ‘concealed questions’, can have question-type meanings when placed in certain interrogative contexts. Classical examples include:

- (9) a. Kim asked me the price of this book. (≈ ‘Kim asked me what the price of this book is.’)
 b. Kim told me the answer to the question. (≈ ‘Kim told me what the answer to the question is.’)
 c. Kim does not know the governor of California. (≈ ‘Kim does not know who the governor of California is.’)³

Concealed questions have received a lot of attention in the literature. See Frana 2020 for a recent synopsis as well as, e.g., Barker 2016 and Frana 2017. The crucial properties of concealed questions are (i) they have a meaning superficially similar to that of a question;⁴ (ii) they can occur in most (but not all) typical indirect interrogative contexts (see Frana 2017:28-29 for a discussion); and (iii) they have the distribution of Noun Phrases rather than that of clausal complements. The last of these properties is demonstrated at length by Grimshaw 1979. For instance, contrary to indirect interrogatives, concealed questions cannot be extraposed, as illustrated in (10), but they can be inverted with an auxiliary, as illustrated in (11):

- (10) *It is uncertain [_{NP} the answer to the question]. (Compare: It is uncertain [_S what the answer to the question is].)
 (11) Is [_{NP} the answer to the question] uncertain? (Compare: *Is [_S what the answer to the question is] uncertain?)

Nathan (2006:21) notes that “insofar as a concealed question denotes a question, that question is an *identity* question, i.e. one of the form *who X is* or *what X is*.” This is apparent from the glosses provided for the examples in (9). A brief review of the literature suggests that this is the current received position (Nathan specifically argues against Baker on this point). For this reason, we will henceforth call classical concealed questions ‘Identity Concealed Questions’ (ICQs), as opposed to the PCQs illustrated above, keeping the term ‘Concealed Question’ as a cover term for NPs with question-type meanings in general.

Polar nouns are similar to nouns heading ICQs in that they head constituents which have

³Note that (9-c) also has a second reading, irrelevant in the present context, where it means ‘is not acquainted with’, in which the NP has its ordinary 1st order entity denotation.

⁴The question of their specific semantics is at the heart of most of the recent literature on the topic, the main proposals being that they denote individual concepts (e.g., Romero 2005, Frana 2010, and Frana 2017) or questions/propositions (e.g., Nathan 2006 and Aloni and Roelofsen 2011).

the distribution of Noun Phrases rather than that of clausal complements. Thus PCQs exhibit a behavior that is precisely parallel to that of ICQs illustrated in (10) and (11). They cannot be extraposed (12) but can undergo Subject-Auxiliary Inversion:

- (12) *It is uncertain his survival. (Compare: It is uncertain whether or not he will survive.)
 (13) Is his survival uncertain? (Compare: *Is whether or not he survived uncertain?)

However, PCQs differ from ICQs in four key respects.

First, their semantics are clearly different. As noted above, the meaning of a PCQ is related to that of a polar question, as in (14-a), whereas that of a ICQ is similar to that of an identity question, as in (14-b).

- (14) a. Their presence was uncertain.
 (≈ Whether or not they were present was uncertain. / ≠ #What their presence was was uncertain.)
 b. Their price was uncertain.
 (≈ What their price was was uncertain.)

Furthermore, ICQs typically involve ‘functional nouns’, cf. Nathan 2005:292, who takes up the notion introduced by Heim 1979: “*governor* is a function from states to the individuals who govern them; *height* is a function from objects to numbers (or measures); and so forth”;⁵ polar nouns, on the other hand, seem to involve a $p \vee \neg p$ alternative.

Note also that some polar nouns, e.g., *relevance*, *efficiency*, *appropriateness*, can be ambiguous and allow for both a polar reading and a degree reading of the concealed question, as in (15).

- (15) In addition, because FDA approval is mandatory, industry and medicine must heed FDA standards regardless of their relevance, efficiency, and appropriateness (COCA)
 (≈ regardless of whether or not they are relevant, efficient and appropriate)
 (≈ regardless of how relevant, efficient and appropriate they are)

We will call NPs with this second reading, similar to that of a degree question, Degree Concealed Questions (DCQs). These will be further discussed in section 5.⁶ It seems then that the set of polar nouns and the set of nouns heading ICQs are clearly distinct.

Second, polar nouns and ICQ nouns differ from a morphological point of view. Polar nouns are typically deverbal or deadjectival nominalizations, whereas ICQ nouns can be underived, e.g., *price* in (9-a), *capital* in (16-a), *time* in (16-b), *number* in (16-c) ...⁷

⁵It is known that non-functional nouns can acquire classical concealed question readings when combined with certain modifiers: Partee and Borschev 1999 and Barker 2016 observe that an adjective like *favorite* can shift a sortal concept into a relational one (hence the acceptability of *the favorite animal of most people* as an ICQ). Caponigro and Heller 2007 also discuss the variety of nouns that can have ICQ readings.

⁶Note that there really are two clearly distinct readings for (15), both of which are also clearly distinct from the typical identity question reading of ICQs. However, in the case of (15), the intended interpretation is underdetermined by the context, probably because the choice between the two is not crucial to the communicative intent of the speaker. As will be discussed in section 5, cases like (15) are actually quite common. It should be noted that in the rest of this paper, a number of the examples cited to illustrate PCQs are in fact similarly ambiguous between a degree and a polar reading. We do not see this as a problem since all of them clearly allow the polar reading, and could be made entirely unambiguous by making the context more specific.

⁷Note that some ICQ nouns are derived, e.g., *answer* in (9-b) is converted and *governor* in (9-c) is an agentive nominalization.

- (16) a. I've forgotten the capital of Vermont.
 b. She couldn't remember the time of the meeting.
 c. It depends on your number.

Here are examples of polar nouns derived from verbs and from adjectives:⁸

Deverbal	<i>cooperation, participation, resignation, completion, integration, consent, surrender, return, recovery, disclosure, existence, attendance, survival, approval, acceptance, success, victory.</i>
Deadjectival	<i>presence, truth, legality, conformity, loyalty, availability, veracity, silence.</i>

Third, polar nouns differ from ICQ nouns in that their usual (i.e. non-question) denotations are never first-order entities. Their 'default' non-interrogative reading corresponds rather to eventualities (second-order entities). ICQ nouns, on the other hand, can easily denote concrete first order entities or individuals, e.g., *governor* in (9-c)). They can also denote various kinds of abstract objects (e.g., *price, answer, name*), but not eventualities.

This semantic difference can be related to the above-mentioned morphological difference between ICQ nouns (which can be morphologically underived) and polar nouns, which are morphologically derived. As is well known, many nominalizations, i.e., nouns that are morphologically derived from verbs and adjectives, can inherit some of the argument structure and semantics of their base verbs or adjectives (see e.g., Haas et al. 2009 and Roy and Soare 2014). For instance, in (17-a), the noun *rejection* inherits the argument structure of its base verb *reject*, realizing its subject argument as a possessive NP and its object argument as a PP[of]. It also inherits its semantics, denoting an eventuality. In the case of (17-a) more specifically, the derived noun *rejection* denotes an achievement in Vendler's typology, as would the verb in the corresponding utterance with an infinitival complement, given in (17-b).

- (17) a. [This] provided the basis for the objections of the Reformers about automatic grace and led to their rejection of the very notion of opus operatum. (COCA)
 (≈ 'led to the event of their rejecting the very notion ...')
 (≠ 'led to the fact that they rejected the very notion ...')
 b. [...] led them to reject the very notion ...

Of course, many nominalizations can be less directly related to the verb's semantics, as they can denote facts, as in (18), or concrete individuals (typically a participant in the eventuality, or its result), as in (19), i.e., third and first order entities respectively according to the typology in Lyons 1977.

- (18) [...] echoing remarks made by union officials Monday after announcing their rejection of the district's contract offer. (COCA)
 (≈ 'announcing the fact that they rejected the district's contract offer')
 (≠ 'announcing the event of their rejecting the district's contract offer')

- (19) a. This company's 20 employees (cf., This company employs over 20 staff)

⁸Depending on one's theory of morphological derivation, not all of these nouns might be considered to be synchronically derived. The crucial point is that even in cases where one might seriously doubt the existence of a synchronic morphological link, like *victory* and *veracity*, their semantics is that of a typical deverbal or deadjectival noun respectively derived from *win* and *true*.

- b. Her translation of the novel is easy to read. (cf., She translated the novel)

The crucial property of polar nouns is then that they cannot refer to individuals and consequently cannot have the correlated ICQ readings. Rather, they can have three readings: eventuality (eventive, as in (20-a), or stative), factive (20-b), or polar (20-c).⁹

- (20) a. A new film about the band, From the Sky Down, documents how their huge success in the 1980s provoked a bout of self-loathing (COCA)
 b. America has determined enemies, who hate our values and resent our success – terrorists and crime syndicates and drug cartels and unbalanced dictators.
 c. One key example is the process of seagrass restoration, for which costs are very high (Kenworthy et al. 2006) and success is uncertain. (COCA)

Fourth, as we shall see in more detail in the following section, polar nouns get their polar reading in a more restrictive set of interrogative contexts than nouns involved in classical concealed questions (ICQs).

2 Contexts triggering polar readings

As we have just mentioned, polar nouns only have their PCQ readings in a subset of the contexts selecting indirect interrogatives. Furthermore, depending on the context, the PCQ reading is more or less easily accessible. Specifically, as will become apparent, the accessibility of PCQ readings with a given predicate is predicted by the intuitive lack of factive presupposition associated with the predicate, or ease of presupposition cancellation.

To make this idea clear, consider Karttunen’s typology of indirect question contexts (Karttunen 1977:6), which we have ordered to reflect strength of presupposition:

- (a) No presupposition:

- inquisitive predicates, e.g., *ask*, *wonder*, *investigate*, *be interested in*, ...
- predicates of dependency, e.g., *depend on*, *be related to*, *have an influence on*, *be a function of*, *make a difference to*, ...

- (b) Presupposition not projected or easily cancellable in negative or modal contexts:

- predicates of conjecture, e.g., *guess*, *predict*, *bet on*, *estimate*, ...
- predicates of opinion, e.g., *be certain about*, *have an idea about*, *be convinced about*, ...
- predicates of decision, e.g., *decide*, *determine*, *specify*, *agree on*, *control*, ...

⁹Polar nouns are thus similar to what Frana and Moulton 2018 call ‘Concealed Propositions’, namely NPs which can be “ambiguous between event denoting expressions and proposition denoting expressions”. Frana and Moulton note similarities between concealed propositions and concealed questions (although syntactically NPs, “they can serve as arguments of certain question/proposition selecting verbs and can be paraphrased by questions/propositions [...] they also occupy intensional argument positions, thus not allowing for substitution of equivalents”). But they do not identify the third possible reading for some of these nouns in some contexts, namely the polar reading. It is not clear whether their analysis in terms of event concepts can be extended to polar nouns, or how their hypotheses can explain that both factive and polar readings can arise in intensional contexts.

- predicates of relevance, e.g., *matter, be relevant, be important, care, be significant, ...*

(c) Presupposition difficult or impossible to cancel:

- predicates of retaining knowledge, e.g., *know, be aware, recall, remember, forget, ...*
- predicates of communication, e.g., *tell, show, indicate, inform, disclose, ...*
- predicates of acquiring knowledge, e.g., *learn, notice, find out, discover, ...*

Inquisitive predicates and predicates of dependency are the only ones that carry no presupposition at all and these are in fact the predicates that allow PCQ readings without any special contextual restrictions, as illustrated in (21) and (22) respectively:

- (21)
- The investigations have yet to find conclusive proof of the presence of the mysterious creatures but, asked about their existence, Charlie Wilson, who coordinates reports for the Government agency, said: [...] (iWeb)
 - There were no adverse findings in the preclinical toxicology studies, and the molecule [...] is now in clinical development to investigate its safety [...] when administered to healthy volunteers [...] (COCA)
 - Are there ever times, Mr. Costopoulos, when you wonder about his guilt? (COCA)
 - There are many things down in the Dumps that the Brass and upper status citizens do not know about, many of them hidden in plain sight. They have no need for them, and so have never thought to inquire about their existence. (COCA)
- (22)
- Our getting off this planet depends on his cooperation. (COCA)
 - This shows us that focusing on improving our patients' quality of life can have an influence on their survival. (iWeb)
 - Your professional success is related to your participation in some organization, group, union, or club. (iWeb)
 - This article will touch on the top three mental preparation skills that will make a difference to your success. (iWeb)

Similarly, presupposition is not projected — or easily cancelled — after predicates of conjecture, of opinion, of decision, and of relevance. Consequently, polar nouns can occur with their polar readings in such contexts, as illustrated in the following:

- (23)
- Did you know that how you talk about each other to your friends and family and even strangers may predict your success as a couple? (iWeb)
 - So it's really impossible to predict their success with a new product based on that. (iWeb)
 - Although toenails are validated biomarkers for mercury and arsenic, their validity is unclear for cadmium and manganese [...] (COCA)
 - It may be a little premature to investigate categories as independent variables when their validity is uncertain. (COCA)
 - So is it possible for two natural adversaries to come together on a strategy that will ultimately determine their survival? (iWeb)
 - "[...] The charges are quite explicit," Nyquist said. "And the UN will decide their validity, when you get back to Earth. [...]" (COCA)

- g. There are many goofy and expensive “ergonomic” keyboards, but RSI experts can’t agree on their effectiveness. The consensus is that they might help, but probably not much without other work-environment changes such as proper posture and the correct seating position. (iWeb)
- h. Peppermint seems to be a good choice when it comes to what to eat when nauseous for some people, even though doctors and scientists don’t agree on its usefulness. (iWeb)
- i. The legality of their presence is irrelevant to the more basic human and divine demand that we look after our brothers and sisters in need. (COCA)¹⁰
- j. In addition, because FDA approval is mandatory, industry and medicine must heed FDA standards regardless of their relevance, efficiency, and appropriateness. (COCA)

It should be noted that, with these predicates, the presence of negation (e.g., *impossible* in (23-b), *unclear* in (23-c), *uncertain* in (23-d), *irrelevant* in (23-i), *regardless* in (23-j)) or of a modal (e.g., *may* in (23-a), *will* in (23-e) and (23-f)), or both (as in (23-g)) is crucial to the PCQ interpretation.

In the absence of negation or modality, these predicates are typically used, in naturally occurring data, to describe a subject’s stance toward a possible outcome (or possibility, cf. Ginzburg and Sag 2000), toward a proposition, or toward a fact, as shown in examples like (24), (25) and (26) respectively. The possibility that the outcome might not obtain or that the proposition or fact might not hold is simply not taken into account. As such, they generally do not allow the PCQ reading.¹¹ Note that even in cases with a modal or negation, the overall context can make it clear that no PCQ reading is intended, as in (26-c), where the reading is clearly factive.

- (24) The younger Mr. Gault joined Rubbermaid as vice chairman in January 1980, and by May was elected chairman and chief executive. It was his performance there that led many to predict his success at Goodyear. (COCA, compare to (23-a) and (23-b))
- (25) His enemy smirked at him, knowing his victory was certain. (iWeb, compare to (23-d))
- (26) a. she fails to explain how poor whites made the transition from the Depression to a postwar America in which they became a major political and economic factor. Perhaps the war itself, and continuing postwar prosperity, sustained poor whites, exposing them to more education and opportunities than their parents had ever seen. [...] Whatever the reasons, their success was clear. They had political

¹⁰This example is clearly ambiguous between a polar reading (\approx ‘whether or not their presence is legal is irrelevant’) and a factive reading (\approx ‘the fact that their presence is legal is irrelevant’). This ambiguity is especially frequent with predicates of relevance and can only be resolved by the context. It suggests that a unified analysis of factive and polar interpretations should be attempted, perhaps along the lines of Frana and Moulton 2018 cited in footnote 9 above.

¹¹This clearly relates to the fact that indirect interrogatives are much more frequent and more acceptable with these predicates in the presence of negation or modality, e.g., *It is unclear/It should be clear/#It is clear whether or not they succeeded*; *It is irrelevant/#relevant whether or not they are present*. There is no reason to believe that the cases without negation or modality are ungrammatical, but it is harder to imagine contexts where one could use them felicitously, just as is the case for their PCQ counterparts. In (26-b), for example, it seems marginally possible to get a PCQ interpretation, despite the absence of negation or modal. It is likely that PCQ readings are more generally available in non assertive contexts, just as is the case for indirect interrogatives, as in: *Is their presence clear?* (compare: *Is it clear whether or not they are present*), *Is their survival relevant?* (compare *Is it relevant whether or not they survived?*); but we have been unable to find clear occurrences of these types in the corpora we have consulted.

- clout, supporting segregationist governors [...] (iWeb)
- b. Although LBP is a symptom rather than a diagnosis, its presence is relevant when assessing fitness for work, (COCA, compare to (23-i))
- c. Further, the fundamental moral maxims apply universally, and reasonable people can agree on their truth. (iWeb, compare to (23-g))

Finally, it is also marginally possible to find polar nouns in PCQs after predicates of retaining knowledge and predicates of communication, as in (27) and (28) respectively, though occurrences appear to be much less frequent in corpora and there are major restrictions on the predicates that allow the PCQ reading:¹²

- (27) a. The performance of a supervised classifier is restricted by the “quality” of the training data since outliers will deteriorate the classification accuracy. Unfortunately, their existence is unknown a priori.
(<https://ieeexplore.ieee.org/document/322761> 14 dec 2020)
- b. Estimates are also flagged as less reliable if 15% or more of patients were registered only from a death certificate or at autopsy and excluded from analysis, since their survival is unknown.
(<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5879496/> 14-dec-20)
- (28) a. Kearney saves the scorebooks from all his games. The numbers tell the history of the more than 300 basketball games he has coached at Skyland since he was hired on in December 1974. The old scorebooks record all the coaches’ efforts in terms of points scored and games won. But it does not show their success or failure. (COCA, note antonym)
- b. Because they are at the bottom of aquifers instead of floating on the water table, typical monitoring wells do not indicate their presence. (iWeb)

Most predicates of these types appear to exclude a PCQ interpretation, even with the nouns that enter into the construction most easily. In most cases, as expected given the difficulty of cancelling the presupposition with these predicates, only factive interpretations are possible:¹³

- (29) a. He moved to a downwind position so the deer would not be aware of his presence. (COCA, \approx aware of the fact that he was present; \neq aware of whether or not he was present)
- b. Even our cell phones, always within reach, carry cameras capable of producing acceptable still and video images. A phone should not be your “go to” memory maker, but remember its availability in a pinch. (COCA, \approx remember the fact that it is available; \neq remember whether or not it is available)
- c. When MSG is added to products directly, the FDA requires manufacturers to disclose its inclusion on the ingredient statement. (COCA, \approx disclose the fact that it is included; \neq disclose whether or not it is included)

As for predicates of acquiring knowledge, they seem to exclude PCQs altogether, which

¹²As was the case with predicates of conjecture, opinion, decision, and relevance, and for the same reasons, the relevant readings are only available in the presence of negation or modality, to the extent that they are available at all.

¹³In fact, many of these predicates do not appear to allow such NP complements even with a factive reading: ??*They did not know/remember her presence/existence/survival/success.* ??*They did not tell/show her presence/existence/survival/success.*

is again expected, given the total implausibility of cancelling the presupposition with these predicates. Only factive readings are possible:

- (30) He had entered so silently that I had not noticed his presence until he spoke. (COCA)
 (≠ ‘I had not noticed whether he was present’)
 (≈ ‘I had not noticed the fact that he was present’)

Overall, it seems that the possibility of a PCQ reading is linked to the absence of presupposition or to presupposition cancellation (that is, the absence of a bias towards either of the polar alternatives). Predicates that do not presuppose, viz., inquisitive and dependency predicates, easily trigger a PCQ reading. By contrast, for predicates that *do* presuppose, the possibility of a polar reading depends on the ease with which it is possible to cancel the presupposition, explaining why negation and modality play a crucial role.

Presupposition cancellation is not necessarily established by modality or negation on the verb phrase. Negation within the noun phrase can also do the job, as shown by various recurrent constructions that make the alternative explicit, specifically (i) the addition of *or* + antonym; (ii) the addition of *or non-*; and (iii) the addition of the idiom *or lack thereof*. These are illustrated in the following examples respectively:

- (31) a. Some viewed the psychological principles underlying instructional design as in-violate: the presence or absence of technology was simply of secondary (or even tertiary) concern. (COCA)
 b. The timing of a product’s introduction can decide its success or failure. (COCA)
 c. The jury will begin deliberating her guilt or innocence tomorrow. (COCA)
- (32) a. Students were sent an information sheet about the study including the online link to the survey questionnaire and were assured that they were under no obligation to complete the questionnaire and their success on their programme would not be influenced by their participation or non-participation in the survey. (COCA)
 b. The student-athletes completed an alcohol questionnaire to determine their use or non-use of alcohol. (COCA)
- (33) a. For now, the advent of e-books means not replacing print, but supplementing it — redefining publishing economics and opening the way for authors whose work has been kept from appearing between book covers. If e-books do nothing more, regardless of the success or lack thereof of new gadgetry to display them, this technology will have a profound effect on what we read and what we think. (COCA)
 b. Participation in this study is not a course requirement, and your participation or lack thereof will not affect your class standing or grades [...] (COCA)

The relevance of these constructions, which make the alternative reading explicit, is corroborated by the fact that it is usually impossible to use them with presupposing predicates in the absence of negation or modality as this forces a clearly distinct and unnatural polar reading:¹⁴

¹⁴ Notice that the case provided in (32-b) apparently contradicts this generalization. *Determine* is a predicate of decision, and as such, it does not usually allow the PCQ reading in the absence of negation or modality, as is confirmed here by the fact that removing ‘or non use’ makes the polar reading impossible (*The student-athletes completed an alcohol questionnaire to determine their use of alcohol.*; note that this sentence *can* be interpreted with an identity or manner reading: ‘determine the way in which they use alcohol’ or ‘determine what their use of alcohol is’). It thus appears that contextual factors can allow these explicit alternative constructions to

- (34) a. #It was his performance there that led many to predict his success {or failure / or lack thereof}. (Compare (24))
 b. #His enemy smirked at him, knowing his victory or loss was certain. (Compare (25))
 c. #Reasonable people can agree on their truth {or non-truth/or falsity}. (Compare (26-c))

The preceding examples illustrate the fact that contextual factors can make polar readings available. This will be further discussed in section 4, where we will also show that complements and adjuncts to a nominalization can also coerce a polar reading. But before we discuss such contextual coercion, we focus on the properties of ‘central’ polar nouns in the following section.

3 Distinctive properties of polar nouns

In this section we center on the lexical semantic properties that make polar readings possible for nouns. As already mentioned, polar nouns clearly differ from ICQ nouns in that in many contexts they denote eventualities. They never denote individuals, hence cannot be the target of identity questions with *what* or *who*:

- (35) a. #What was their success/consent/survival?
 b. #Who was their presence?

Conversely, nouns that occur in ICQs do not function as polar nouns:¹⁵

- (36) It depends on their answer/solution. (\approx on what their answer/solution is; \neq on whether or not they answer/solve it)

Before exploring these lexical semantic issues further, we want to point out a remarkable syntactic property of polar nouns when used in PCQs, namely that the external argument has to be realized for the polar reading to be available. This is the case in (37-a), and the PCQ interpretation is clearly intended (\approx ‘depend on whether all states in the region participate’). On the other hand, removing the subject, as in (37-b), makes the PCQ reading impossible and, since no other reading is easy to access, the sentence is infelicitous. Let us insist on the fact that this is a constraint on polar nouns only in their uses in PCQs. Outside PCQs, polar nouns behave like typical nominalizations and do not require overt subjects. This is illustrated in

override the default outcome/proposition/fact reading that usually obtains in the absence of negation or modality.
¹⁵There are a few nouns that seem to be able to serve as the head of both ICQs and PCQs. However, we suggest that this is due to polysemy of the nouns in question. Consider, for instance, *truth*. One meaning of the noun is synonymous with *veracity*, and under this meaning it is clearly polar. In other cases, *truth* refers to ‘that which is the case’ and gives rise to an ICQ:

- (i) a. There was no doubt about the truth of Christianity in the most literal senses. (COCA; = about the veracity of Christianity; \approx about whether or not Christianity is true)
 b. in both case they believe what they need to believe regardless of the truth. (COCA; \neq regardless of the veracity; \approx regardless of what the truth is.

Nouns like *identity*, *relevance*, and *significance* seem to exhibit a similar polysemy, and can give rise to PCQ and ICQ interpretations, depending on the context (e.g., in examples like *This depends on their identity/relevance/significance*, interpretable either as ‘This depends on whether or not they are identical/relevant/significant’ or as ‘This depends on what their identity/relevance/significance is’.

(37-c), where *the participation* expresses an event and has no overt subject.

- (37) a. Its success will also depend on the participation of all states in the region [...] (COCA)
b. #Its success will also depend on the participation.
c. Clearly, the participation was far broader in the 1997-98 talks process. (COCA)

In this, polar nouns are very different from usual nominalizations, for which the realization of the subject is optional.¹⁶ As pointed out by an anonymous reviewer, this is similar to the obligatory status of the *internal* argument in ICQs, with the caveat that the latter does not need to be expressed syntactically as long as it is recoverable from the discourse context, as in (38-a). By contrast, in PCQs the external argument must be syntactically overt, cf. (38-b):

- (38) a. Kim bought a book, but I can't remember the price. (≈ but I can't remember what the price of the book is)
b. The hikers haven't been seen for days and #the survival is uncertain. (≠ and whether or not the hikers survived is uncertain; cf., 'and their survival is uncertain')

Let us now consider the types of eventualities that can be referred to by polar nouns. First, we note that many polar nouns refer to states (e.g., *conformity*, *presence*, *truth*, *legality*, ...). However, referring to a state is not a sufficient condition for a noun to be interpretable as a polar noun: numerous stative nouns do not allow a PCQ interpretation. In a nutshell, it seems that a stative noun can function as a polar noun only if there is a clear and easily accessible contrast associated with the entity being or not being in the state. Thus, states which are not gradable and which have contradictory antonyms, as is the case for the examples just given, typically function well as polar nouns. For Individual Level Properties, i.e., states whose boundaries usually coincide with the existence of a subject, it appears that this is a necessary condition, as shown by the contrast between (39-a), where the ILP *existence* is not gradable and has a contradictory antonym, and (39-b), in which *intelligence* denotes a gradable ILP lacking such a contradictory antonym. In the latter, the polar reading is impossible (a degree reading is possible, on the other hand, as discussed below in section 5):

- (39) a. They have no need for them, and so have never thought to inquire about their existence. (COCA; ≈ inquire about whether or not they exist)
b. The cubs, depending on their intelligence, are trained to ride scooters, go down slides or splash in kiddie pools. (COCA; ≈ depending on how intelligent they are; ≠ depending on whether or not they are intelligent)

Stage Level Properties seem to be less constrained in this respect, in that they can function as polar nouns even without having a contradictory antonym. This may be explained by the fact that the question of the subject's being in a specific state (or not) is clearly more salient when the state is temporary. More specifically, temporary states are often linked to well-defined bounding eventualities. E.g., 'presence' is bounded by events of arrival and departure. We

¹⁶Note that the subject is not always expressed as a possessive NP or PP[of]. It can also, for instance, be expressed as a PP[for]:

- (i) Success for both beginning general and special education teachers depends on their ability to achieve multiple goals [...] (COCA)

suggest that stative nouns for which the state is bounded by specific eventualities in this way will in general allow a polar interpretation, because the events of transition into and/or out of the state make the contrast between its holding or not holding especially salient and accessible.

In this light, consider the case of nouns denoting psychological states (e.g., *sadness*, *regret*, *anger*, *love*, *admiration*, *interest*, *worry*, *fear*, ...). Despite being stage-level, they do not appear to allow polar readings:

- (40) a. #It depends on her happiness. (\neq It depends on whether she is happy.)
 b. #It is impossible to predict their regret. (\neq ... to predict whether they (will) regret it.)
 c. #Their admiration is irrelevant to this. (\neq It is irrelevant whether they admire it.)

We suggest that the unavailability of a polar reading in such cases is due to the lack of a basis for contrast. First, these nouns are gradable (there are a variety of intermediate states between happiness and sadness and one can be more or less happy) and do not have contradictory antonyms. Second, these states are not bounded by other eventualities.¹⁷ It may be assumed that without bounding by a dynamic transition, the contrast between states of affairs is not salient enough to allow for a polar reading.¹⁸

Though many polar nouns are stative, nouns denoting dynamic eventualities can also function as polar nouns in PCQs. However, it appears that polar nouns, in their default, non-polar reading, can denote only simple dynamic eventualities, which do not involve distinct subevents, i.e., achievements and activities. They do not denote complex event structures. Among central polar nouns, beyond those denoting states, a few denote activities (*participation*, *attendance*, *collaboration*, ...) and many denote achievements (*resignation*, *integration*, *surrender*, *success*, *victory*, ...). But our list of polar nouns does not include any accomplishments.¹⁹ The only nouns derived from accomplishment verbs that can have a polar reading correspond to passive nominalizations (and thus involve the selection of a subevent of the initial complex eventuality, namely, the result state). This is illustrated by the following contrast: in (41-a) the derived noun is a simple eventuality (as it denotes the state resulting from a dynamic process) and the polar reading is possible; in contrast the corresponding active in (41-b) is a complex eventuality (an accomplishment, involving both a dynamic process and a resulting state) and the polar reading is unacceptable:

- (41) a. The outcome depends on the city's destruction.

¹⁷The states of sadness, regret, anger, etc. may be related to various potential causes or consequences, but they are not necessarily bounded by specific events. For example, while someone's presence is the necessary consequence of her arrival, someone's sadness may not be due to a specific event, or may not end because of a specific event: the boundaries of such states do not necessarily correspond to eventualities.

¹⁸Note the following example, where the 'or + antonym' construction (see (31) above) forces a contradictory polar alternative reading for the psychological state and gives rise to a PCQ:

- (i) A woman's eyes and expressions can really reveal a lot about her happiness or sadness in life if one is sensitive and wise enough to ... (\approx about whether she is happy or sad in life; <https://allquotez.com/girls-and-women/girl-quotes/?page=0> ; Consulted Dec 14 2020)

¹⁹Some of the nouns identified here as achievements seem to be compatible with *in* complements — a property usually associated with accomplishments. But, as argued by Piñón 1997, some "achievements are compatible with time-span adverbials (i.e., *in*-adverbials), the latter do not measure the smallest interval during which the described eventuality takes place, but rather a contextually determined interval at the end of which it takes place." That is, in some cases, achievements can be conceived of as the endings of other eventualities but these other eventualities are not lexicalized.

- (\approx on whether or not the city is destroyed)
- b. #The outcome depends on the barbarian's destruction (of the city).
(\neq on whether or not the barbarians destroy the city)

We conclude that a shared characteristic of polar nouns is the fact that, in their non polar uses, they describe a simple eventuality, whether stative or dynamic. Simple eventualities are necessary so that there is a clear contrast between two states of affairs, i.e., an alternative. Constructions like *or* + antonym, *or non-* and *or lack thereof* can make these contrasts explicit, as illustrated above in (31), (32), and (33).

Denoting a simple eventuality is a necessary but is not a sufficient condition for a noun to have a polar reading. We noted above that verbs denoting psychological states do not function as polar nouns. Similarly, many nouns denoting achievements (e.g. *attack*) or activities (e.g. *swimming*) cannot have a polar reading.

We propose that there is an additional constraint on the non stative simple eventualities, activities and achievements, that can give rise to polar readings, namely that the simple eventuality denoted must be correlated with a salient state of the entity involved (that is, the entity typically expressed by a possessive, *their* in (42), which is the subject of the corresponding finite indirect interrogative clause). This can be a state resulting from the eventuality, a state coextensive with the eventuality, or a state causing the eventuality, as in the the following examples respectively:

- (42) a. It depends on their success. (\approx on their eventually being successful or not)
b. It depends on their cooperation. (\approx on their being cooperative / willing to cooperate, or not).
c. It depends on their approval. (\approx on their being favorable / approbative or not)

'Success' in (42-a) is the state resulting from an unspecified eventuality (e.g., winning an election or solving a puzzle) through which the subject acquires the property of being successful. Similarly, 'cooperation' in (42-b) does not denote any specific type of activity, rather it denotes a cooperative attitude of the subject, that is, a state of the subject that is coextensive with the activity of cooperating. In the same way, 'approval' in (42-c) denotes a favorable/approbative stance of the subject that causes the achievement. The possibility of copular paraphrases, as proposed in (42) provides further evidence for the salience of this stative component. The predicative complement in these paraphrases denotes the only descriptive component of the noun (the associated dynamic eventuality being underspecified).

Note further that for polar nouns denoting simple dynamic eventualities, the same constraints bear on the relevant associated states as those discussed above for stative polar nouns. The associated state has to be easily construed as opposed to its non-occurrence. It is a stage-level state, as the state is linked to the occurrence of the eventuality.

To sum up the discussion, we propose that a noun can have a polar reading (in the contexts discussed in section 2) if, in its usual uses, it denotes a simple eventuality whose occurrence leads one to identify (in the case of stative nouns), or infer (in the case of dynamic nouns) a salient state of the subject, in contrast with that state not holding.

As discussed above, one central case where this holds is the that of nouns having a contradictory antonym. It is important to note here that only the positive term in a given pair of contradictory antonyms allows the polar reading. For instance, *presence*, *success*, *truth* or *approval* can have polar readings (illustrated in (43-a), (44-a) and (45-a), the last being ambiguous between a polar and factive reading), but their antonyms either are not compatible with polar contexts at all as in (43-b) and (44-b) or can only get factive readings as in (45-b):

- (43) a. Your success depends on your presence in class [...] (iWeb)
b. #Your failure depends on your absence in class.
- (44) a. And I've also wondered about the truth of the proverb. (COCA) (\approx about whether or not the proverb is true)
b. #And I've also wondered about the falsity of the proverb.
- (45) a. Why should I care about their approval now? (COCA) (\approx Why should I care whether or not they approve? [polar reading] or \approx Why should I care that they approve? [factive reading])
b. Why should I care about their disapproval now? (\approx Why should I care that they do not approve? [factive reading]; \neq Why should I care whether or not they disapprove? [polar reading impossible])

The fact that negative terms do not allow polar readings can be related to their markedness. According to Horn 1989, negative terms can be considered to be marked (or secondary).²⁰ Horn also states the well-known generalization that for contrary antonyms, the unmarked term can denote the whole scale, contrary to the marked term (*How tall is she?* presupposes nothing about her height whereas *How short is she?* presupposes that she is short). We suggest that the situation is similar with the contradictory antonym pairs under consideration here: the unmarked term can be used in a neutral way to denote both poles of the polar alternative whereas the marked term can only denote the marked pole. Thus marked (negative) terms are used only when a negative possibility, fact, or proposition is considered, and are excluded from contexts that involve the neutral consideration of an alternative.

In this section we have considered nouns that systematically get a polar reading in the subset of polar contexts defined in section 2. In section 4 we will show how certain nouns that usually do not allow a polar reading can be coerced into such a reading by the presence of certain complements or adjuncts. In section 5, we will discuss the case of nouns that allow both polar and degree readings for concealed questions. Finally, in 6, we will briefly discuss other readings of concealed questions.

4 Coerced PCQs with non central polar nouns

In this section, we will discuss how certain nouns, which usually do not allow a polar reading, can appear in a Noun Phrase that has a PCQ reading. Such cases seem to involve contextual coercion: beyond the typical interrogative context, these nouns require a complement or modifier to get the polar reading.

Two patterns can be distinguished. First, certain nouns that have classical ICQ readings in non-assertive contexts, e.g. *abilities* and *desires* in (46), can get polar readings when they occur with certain complements or adjuncts restricting their denotations. Specifically, this is the case when the dependent provides an answer to the ICQ, as in (47). In (47-a), for instance, the infinitival complement *to foster innovation* provides the specific identity of the abilities in question, making a classical Identity Concealed Question irrelevant.²¹

²⁰Horn 1989 provides various criteria (pp.158ff) among which, e.g., linear ordering in disjuncts usually has the unmarked term first (in the COCA, as of Jan 19 2020, there were 788 occurrences of 'presence or absence' as opposed to 51 of 'absence or presence'), the presence of a negative affix on the marked term ('approval' vs. 'disapproval'), etc.

²¹Note that this case can give rise to concealed non-polar alternative questions, e.g.,

- (46) a. The most appropriate level for a young person depends on their abilities [...] (iWeb) (\approx [...] depends on what their abilities are, i.e., on what they are able to do.)
- b. I agree that progress depends on desire, but it doesn't depend on my desires alone. (COCA)
- c. Some races not listed as their abilities are not yet decided. (iWeb)
- (47) a. Corporations must realize that their success in the new global knowledge-based environment depends on their ability to foster innovation [...] (COCA, \approx [...] depends on whether they are able to [...]))
- b. Asked about his desire to be a midfield leader, Can said: "Yes of course [...]." (iWeb)
- c. I inquired about my ability to downgrade or terminate service [...] (iWeb)

Note that NPs like those in (47) will typically have a factive reading in non-interrogative contexts, as in (48):

- (48) a. I was aware of their ability to foster innovation (\approx I was aware of the fact that they are able to foster innovation.)
- b. I was aware of his desire to be a midfield leader (\approx I was aware of the fact that that he desired to be a midfield leader.)

Second, nouns that usually merely denote eventualities, and do not get classical ICQ readings in the interrogative contexts defined in section 2, can get a polar reading when associated with certain modifiers (such as *on time*, *timely* or *successful*), which ascribe a property to the eventuality.

- (49) a. At the end of the day, Chinese success depends on the successful operation of its businesses. (COCA)
- b. But delivery of the blow depended upon the timely arrival of the 1st Marine Division, and upon the speed with which it could be committed. (COCA)
- c. In return she was regarded with esteem, her wishes were respected, and, while she held no public office, many of the movements and ceremonies of the tribe depended on her timely assistance. (COCA)

In those cases it seems that the alternative reading differs from those examined so far: the question is not whether the eventuality *per se* holds or not (unlike, e.g., *Mubarak's survival*, which can be read as *whether or not Mubarak survives*) but rather whether or not a property can be assigned to the eventuality. Thus *the timely arrival of the 1st Marine division* in (49-b) can be paraphrased as *whether or not the arrival of the 1st Marine division was timely* (or *whether or not they arrived on time*), but not as *whether or not the 1st Marine division arrived*. Here the polar reading seems not to depend on the lexical properties of the head noun, but rather on the semantics of the modifiers. It is clear that there are strong constraints on the range of modifiers that make such polar readings possible (for instance, modifiers like *graceful* or *elegant* do not

- (i) Are you planning to make the service a career? Are you very physically fit? do you enjoy manual labor, office environments, airplanes, etc, etc. It really comes down to your desires... as for the Guard, that, too, depends on your desire to serve full- or part-time. The Guard commitment is less than active, but you can usually live where you want and serve, whereas the active force will move you around a bit. Either way, you'll get educational benefits among other benefits. (COCA; \approx depends on whether you desire to serve full- or part-time)

seem to allow them). It may be the case that only modifiers having a contradictory antonym are possible. We leave this question for further research.²²

5 Degree Concealed Questions

As we have shown, central polar nouns involve non-gradable states; either the state directly denoted by the noun is non-gradable, or the state of the subject associated with the eventuality in which the subject participates is non-gradable. Hence, in the subset of concealed question contexts delineated in section 2, they unambiguously get a polar reading (e.g., *presence*, *existence*, *attendance*, *survival*, *recovery*, ...). For example, *presence* has a contradictory antonym and is clearly a non-gradable state. Similarly, *survival* entails a state of its subject, namely that it is either alive or dead, clearly again a non-gradable opposition.

As opposed to this, there are numerous nouns (which can have contrary antonyms) involving a gradable state (e.g., *efficiency*, *significance*, *sincerity*, *satisfaction*, *relevance*, ...). With these nouns, in the relevant interrogative contexts, an ambiguity arises: either the different intermediate values are considered and a degree reading arises, or only the two (opposite) poles are considered and a polar reading arises. In some cases, contextual or world-knowledge factors make clear whether the polar or degree reading is intended. For instance, the context (and the choice of the governing verb ‘limited’ in particular) in (50-a) forces a reading as a Degree Concealed Question (DCQ). But in (50-b), the polar reading is selected given that a hotel is either available or not, giving rise to an PCQ.

- (50) a. Several students also held full-time or part-time jobs that limited their availability to attend the course in the classroom. (COCA)
 b. But maybe I can call some other hotels, check on their availability. (COCA)

Similarly, contextual factors make the preferred reading of the following examples clear:

- (51) a. The MPAA annually retains the Opinion Research Corporation of Princeton, N.J., to poll parents with children under 13 on their satisfaction with the current ratings system, Taylor says. The latest survey in September 2000 placed results in three categories: Fairly Useful to Very Useful (81 percent); Not Very Useful (17 percent), and Not Used/Not Heard Of (2 percent). (COCA; degree reading)
 b. The ambiguity does not much matter, however, because in the end, both answers require the existence of consensus at the Founding about lawdetermining practices at some level. If the “legal” status of certain interpretive rules depends on their satisfaction of some criteria of validity, we must ask what makes those criteria the law-validating ones. (COCA; polar reading)
- (52) a. The L-308S has all the basics, and works great. Minimal in that it doesn’t have the frills, but first class on the basics we actually need. There is no question about

²²We have found one further type of contextual coercion involving coordination with a polar noun. In the following example, *growth*, a noun that usually does not allow a polar reading (*Their success depends on their growth* cannot mean ‘Their success depends on whether or not they grow’), appears to exceptionnally get it because it is coordinated with a polar noun in a PCQ:

- (i) The success of thermoplastics depends on their acceptance and growth within a number of different industries. (iWeb; ≈ whether or not they are accepted and grow)

its accuracy (Specifications list a slightly less extreme range, but same +/- 0.1 EV accuracy as top of the line). (iWeb; degree reading)

- b. Classifying a source as primary or secondary does not comment about its accuracy. Secondary sources can be correct and primary sources can be wrong. (iWeb; polar reading)

In some cases, a Noun which is inherently ambiguous between a degree and polar reading can have specific complements or modifiers that determine the gradability properties of the whole Noun Phrase. For instance, an adjective like *full* can select the upper end of a scale, excluding a degree reading.

- (53) In the long run, the advance of Chinese prosperity depends on China's full integration into the rules and norms of international institutions.
<https://georgewbush-whitehouse.archives.gov/news/releases/2001/10/20011019-4.html>

On the other hand, in many cases, the interpretation remains vague, underdetermined by the context:

- (54) a. Collaboration is facilitated through online forums in which participants report unusual findings and speculate on their significance. (COCA)
b. Some sorcerers and diviners, who establish communication with spirits through perfumes, are somewhat controversial. Many Tuareg express ambivalence toward them and skepticism about their legitimacy. (COCA)
c. One limitation of this approach is that [...]. A second is that its reliability is unknown, and there is reason to be concerned given variability in the effectiveness of instruction and intervention. (COCA)

Finally, some nouns only allow degree readings and systematically give rise to DCQs: because they are gradable, no relevant polar alternative is associated with them. While a noun like *sincerity* allows for both a gradable reading (one person can be more sincere than another) and a polar reading (a person can be judged to be simply sincere or insincere), a noun like *density* only allows a gradable reading.

- (55) a. Older children's need for adult supervision depends on their maturity and skill. (iWeb)
b. The rate each side suffers casualties depends on their strength and their morale. (iWeb)
c. Their behavior in the saturated zone depends on their density. (iWeb)
d. Of course the behavior of monsters depends on their intelligence so the most stupid and most fierce monsters are still [...] (iWeb)

6 The variety of Concealed Question readings

In this section we would like to return to Nathan's claim that all concealed questions are identity questions.²³ First, as we have shown earlier, it is simply impossible to reduce PCQs to identity

²³Nathan 2006, p.21: "Insofar as a concealed question denotes a question, that question is an *identity* [Nathan's emphasis] question, i.e. one of the form *who X is* or *what X is*." See in particular his defense of this claim pp.22-25.

questions. This is made clear by the contrast between possible paraphrases of examples of PCQs and ICQs like those in (14) above, repeated here as (56):

- (56) a. Their presence was uncertain.
 (≈ Whether or not they were present was uncertain. / ≠ #What their presence was was uncertain.)
 b. Their price was uncertain.
 (≈ What their price was was uncertain.)

However, one might propose that it is possible to reduce what we have called Degree Concealed Questions to identity questions. Consider a case like (57-a). We have given paraphrases with degree questions in *how* for such examples, like that in (57-b). But it should be noted that it *is* possible to provide an identity question paraphrase, though it is slightly less natural, as in (57-c).²⁴

- (57) a. The price of the instrument depends on its accuracy.
 b. The price of the instrument depends on how accurate it is.
 c. The price of the instrument depends on what its degree of accuracy is.

Further data that we have come across during our corpus work for this paper suggest that there are in fact concealed questions with a broad variety of meanings. Indeed, it turns out that NPs in the same contexts can also be interpreted as temporal questions, reason questions and manner questions (at least), as illustrated in (58). As shown, these examples allow direct paraphrases in terms of time, reason, and manner questions, but also, similarly to DCQs, as slightly less natural identity questions:

- (58) a. Dvorak further notes that ancient Babylonians could predict its onset within a few hours, the Greeks within 30 minutes. (iWeb; time question)
 ≈ predict at what time it would begin
 ≈ predict what its onset would be
 b. Neurotypical children adapt to such stimuli because they can predict their persistence, and as a result they are able to ignore the stimuli. (iWeb; duration question)
 ≈ predict how long they will persist
 ≈ predict what their persistence will be
 c. “While the officers were approaching Carson, he opened his car door and the officers inquired about his presence in the area,” Stroud said in a Friday statement summarizing the arrest. “Carson began using profanity at the officers even after being warned (that) doing so would subject him to arrest. [...]” (iWeb; reason question)
 ≈ inquired about why he was present in the area
 ≈ inquired about what the reason for his presence was
 d. Fifth, we asked anglers a series of questions about their participation in the shark fishery: Number of shark tournaments fished in the previous 12 months, location of shark fishing, most sharks kept/caught per day, gear size, and other fish commonly caught while shark fishing. (COCA; manner question)

²⁴Nathan 2006, p.21, cites some examples (his (9), (10), (11)) from Baker 1968, which Baker claims show that concealed questions can involve time, location and quantity. Nathan proposes identity paraphrases somewhat similar to those we propose in (57) and (58). However, the specific examples he cites (e.g., *Fred tried to guess the amount of the stolen money* ≈ *Fred tried to guess what the amount of the stolen money was*) lead to somewhat more natural paraphrases than the ones produced for our examples.

- ≈ questions about how they participated in the shark fishery
- ≈ questions about what their participation in the shark fishery was

As mentioned, these examples were found by chance during our corpus work on polar nouns. We have not carried out any systematic searches for them and we are consequently unable at present to provide any firm data on their relative frequency with respect to the polar and degree interpretations which are central to the present paper. However, it does appear that such cases are much less frequent than the polar and degree cases. We leave open the question of whether an attempt to reduce these types of concealed questions to identity questions is the best analysis.²⁵ Certainly, the existence of PCQs, which cannot undergo such a reduction, makes this a priori less appealing as a completely uniform analysis of concealed questions appears to be impossible.

7 Conclusion

Though the existence of concealed questions is widely accepted, the central claim of this paper is that there is a question-type reading of certain nouns, or rather Noun Phrases, that has been overlooked so far, namely, Polar Concealed Questions. The relevant subset of nouns (which denote states or simple dynamic eventualities with an associated state) can have a polar reading in a subset of interrogative contexts. More specifically this reading is available in contexts which lack factive presupposition or allow presupposition to be cancelled.

Our claim is that lexical semantic properties are crucial to delineating the class of polar nouns (they all share certain specific features). However PCQ readings of NPs do not simply depend on the semantics of the head noun. Polar readings can also be triggered by dependents within the NP which introduce a polar alternative and more broadly by contextual factors.

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²⁵Nathan 2006, p.23, suggests such a reduction for his example (16), which is similar to (58-a).

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