Semantics of preferential predicates and their selection

Theory, experimentation, and cross-linguistic investigation

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Overarching questions

Selectional restrictions of clause-embedding predicates

	Declarative	Interrogative
(1) Xander **knows/likes** {	✓that Aadit dances /	✓who dances }.
(2) Xander **wonders/asked** {	*that Aadit dances /	✓who dances }.
(3) Xander **hopes/believes** {	✓that Aadit dances /	*who dances }

(e.g. Grimshaw 1979, Pesetsky 1982, Grimshaw 1990, Pesetsky 1991, Lahiri 2002)

- **Question**: How exactly does the semantics of clause-embedding predicates affect their selectional restrictions?

- **Hypothesis**: Certain predicates are incompatible with some clause-types *because* the combination is **semantically trivial**.

- **Empirical focus**: selectional restrictions of “preferential” predicates (e.g., *like*, *be happy*, *hope*, *fear*).

Outline

1. **Preliminary generalisation**
   - **Non-veridical preferential** predicates are incompatible with interrogative complements.
2. **Theory —** theoretical explanation of the generalisation in terms of the lexical semantics of the predicates.
3. **Experiment**
   - Confirms a general prediction of the theory,
   - but with potential systematic counterexamples.
4. **Analysis of the counterexamples**
   - Leads to fine-grained predictions of the theory
5. **Cross-linguistic testing** — confirms the fine-grained predictions

Preliminary data

Preliminary generalisation

(1) Xander **likes/hates** that Aadit dances. ✓**that** **[+ver]**

(2) Xander **hopes/prefers** that Aadit dances. ✓**that** **[-ver]**

(3) Xander **likes/hates** who dances. ✓**wh** **[+ver]**

(4) *Xander **hopes/prefers** who dances. ***wh** **[-ver]**

Definition: V is **veridical** iff "*x* Vs that *p*" entails *p*

- veridical preferentials: *like*, *love*, *hate*, *be happy*, *be glad* etc.

- non-veridical preferentials: *hope*, *prefer*, *wish*, *fear* etc.

Preliminary generalisation: **Non-veridical preferential** predicates are incompatible with interrogative complements.

(Uegaki & Sudo 2019)

Theory

Semantic triviality & grammar

(1) There is { ✓a / *every } smiling cat. (Milsark 1977; Barwise & Cooper 1981)

- **Architectural assumption**:
  - Certain sentences are **logically trivial** (tautological or contradictory).
  - Our intuition about grammaticality reflects these logical properties: **Logically trivial** sentences are judged to be ungrammatical.

- NB: The relevant notion of triviality is such that it depends only on 'logical' vocabularies.

(1) ✓It is raining and it is not raining.

(Gajewski '02,'09; Fox & Hackl '06; Chierchia '13,'19; Del Pinal '17, Schwarz & Simonenko '18, a.o.)

Uniform semantics for clausal complementation

- Both declarative and interrogative complements denote a set of propositions.
  - **Declarative** complements denote a ***singleton*** proposition-set.
    - ⟦that p⟧ = {p}
  - **Interrogative** complements denote ***non-singleton*** proposition-sets that cover the (presupposed) logical space.
    - ⟦whether p⟧ = {p, ¬p}
    - ⟦who will win the race⟧ = {A will win, B will win, C will win}
- All clause-embedding predicates can in principle be semantically composed with both declarative and interrogative complements. They all select for a proposition-set.
- Given semantic properties of predicates, combinations of certain predicates and certain types of complements result in logical triviality.
  - E.g., ⟦x wonders that p⟧ is logically trivial. (Uegaki 2015; 2023; Theiler et al. 2019)

Preliminary generalisation

(1) Xander **likes/hates** that Aadit dances. ✓**that** **[+ver]**

(2) Xander **hopes/prefers** that Aadit dances. ✓**that** **[-ver]**

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Preliminary generalisation: **Non-veridical preferential** predicates are incompatible with interrogative complements.

(Uegaki & Sudo 2019)

Semantics of veridical preferentials

(1) ⟦x **likes**$_C$ ϕ⟧ = 1

iff there is a true proposition in ⟦ϕ⟧ that x prefers relative to the threshold of preference given C (= the set of alternatives)

(2) ⟦Xander **likes**$_C$ that [Aadit]$_F$ dances⟧ = 1

iff there is a true proposition in {A} that X prefers relative to the threshold of preference given {A, B, C}

(3) ⟦Xander **likes**$_C$ who dances⟧ = 1

iff there is a true proposition in {A, B, C} that X prefers relative to the threshold of preference given {A, B, C}

(Villalta 2018; Romero 2015)

Semantics of veridical preferentials

(1) ⟦x **hopes**$_C$ ϕ⟧ = 1

iff there is a ~~true~~ proposition in ⟦ϕ⟧ that x prefers relative to the threshold of preference given C (= the set of alternatives)

(2) ⟦Xander **hopes**$_C$ that [Aadit]$_F$ dances⟧ = 1

iff there is a ~~true~~ proposition in {A} that X prefers relative to the threshold of preference given {A, B, C}

(3) ⟦Xander **hopes**$_C$ who dances⟧ = 1

iff there is a ~~true~~ proposition in {A, B, C} that X prefers relative to the threshold of preference given {A, B, C}

(Villalta 2018; Romero 2015)

Threshold Significance Presupposition

Threshold Significance Presupposition: Preferential predicates presuppose that there is a proposition in the comparison class (i.e., set of alternatives) that exceeds the threshold of preference.

(1) **Context**: It is common knowledge that Xander knows who will sing at the karaoke party. Yolanda knows that there is no particular person Xander wants to sing (i.e., Xander is indifferent).

a. You: How does Xander feel about who will sing?
Yolanda: #Xander doesn't like who will sing.

b. You: Does Xander like who will sing?
Yolanda: #No

Adding Threshold Significance

(1) ⟦x **likes**$_C$ ϕ⟧

- **Presupposes**: there is a proposition in C that x prefers
- **Asserts**: there is a true proposition in ⟦ϕ⟧ that x prefers

(2) ⟦Xander **likes**$_C$ that [Aadit]$_F$ will dance⟧

- **Presupposes**: there is a proposition in {A,B,C} that X prefers
- **Asserts**: there is a true proposition in {A} that X prefers

(3) ⟦Xander **likes**$_C$ who will dance⟧

- **Presupposes**: there is a proposition in {A,B,C} that X prefers
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(Uegaki & Sudo 2019)

Adding Threshold Significance

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- **Presupposes**: there is a proposition in {A,B,C} that X prefers
- **Asserts**: there is a ~~true~~ proposition in {A} that X prefers

(3) ⟦Xander **hopes**$_C$ who will dance⟧ **trivial!!**

- **Presupposes**: there is a proposition in {A,B,C} that X prefers
- **Asserts**: there is a ~~true~~ proposition in {A,B,C} that X prefers

(Uegaki & Sudo 2019)

Interim summary

- **Preliminary generalisation**: Non-veridical preferential predicates are incompatible with interrogative complements**.**

- **Theoretical explanation**: Non-veridical preferential predicates lead to a trivial interpretation when they are combined with interrogative complements.

- But I have only talked about *like* and *hope.* Does the prediction of the analysis hold for preferential predicates in general?

- Two ways to test the empirical robustness of the generalisation:

  - **Behavioural experiments** with English native speakers
  - **Cross-linguistic testing** based on controlled elicitation sessions.

Experimentation

Experimental design & prediction

- **Prediction**: Across preferential predicates in English, there is a correlation between (a) veridicality and (b) compatibility with interrogative complements.
- **Web-based experiment** where 70 English native-speaker participants judged (a) veridicality and (b) compatibility with interrogative complements of 87 English preferential predicates.
- **Two-block design:**

Suppose your friend Susie tells you the following:

"I demanded that my mother was at home."

Hearing this, how confident would you be in concluding that Susie's mother was at home?

1 (Not confident at all)	2	3	4 (Neutral)	5	6	7 (Very confident)

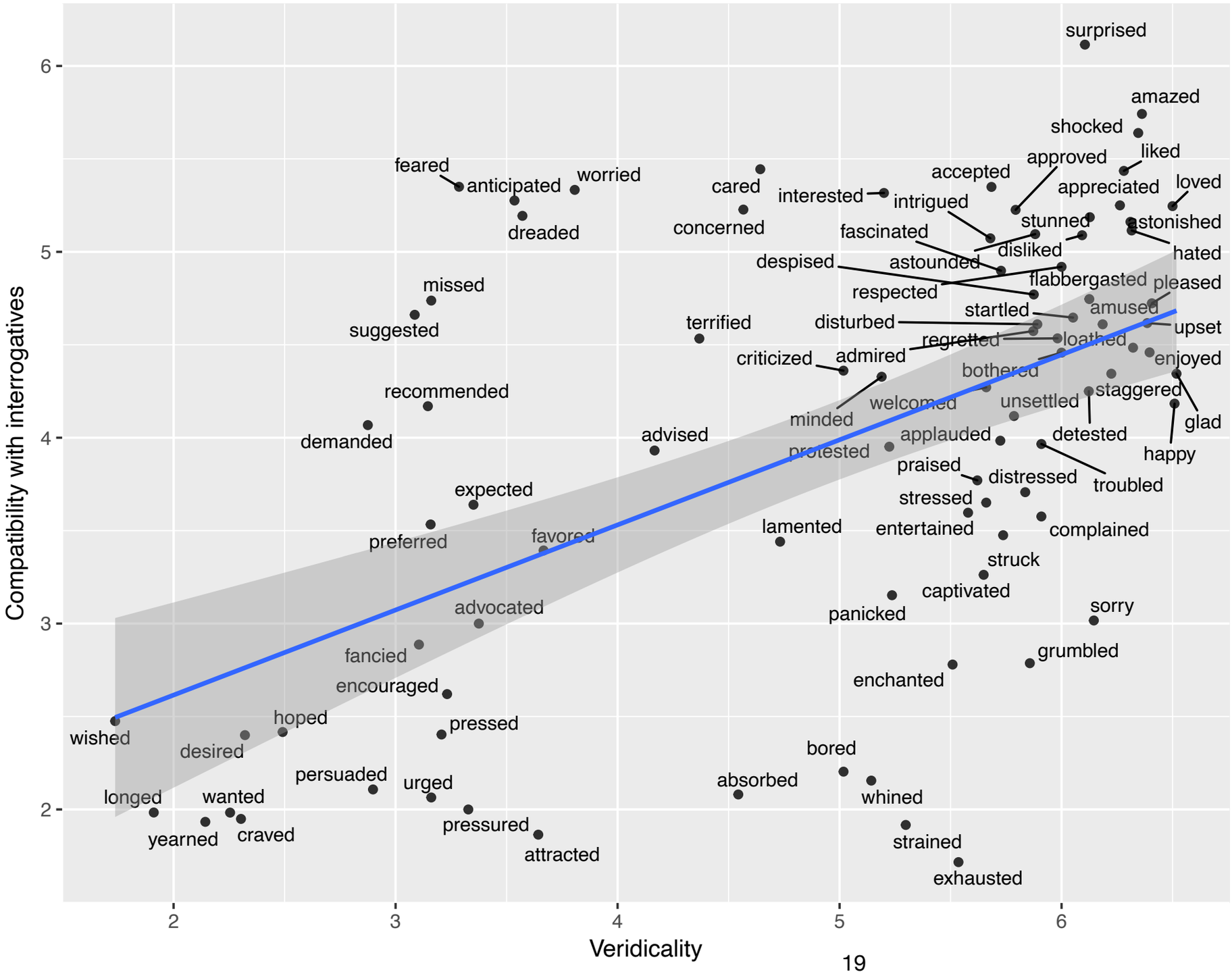
(Uegaki 2022a)

How natural does the following sentence sound to you?:

"I demanded which students were present at the party."

1 (Completely unnatural)	2	3	4 (Neutral)	5	6	7 (Completely natural)

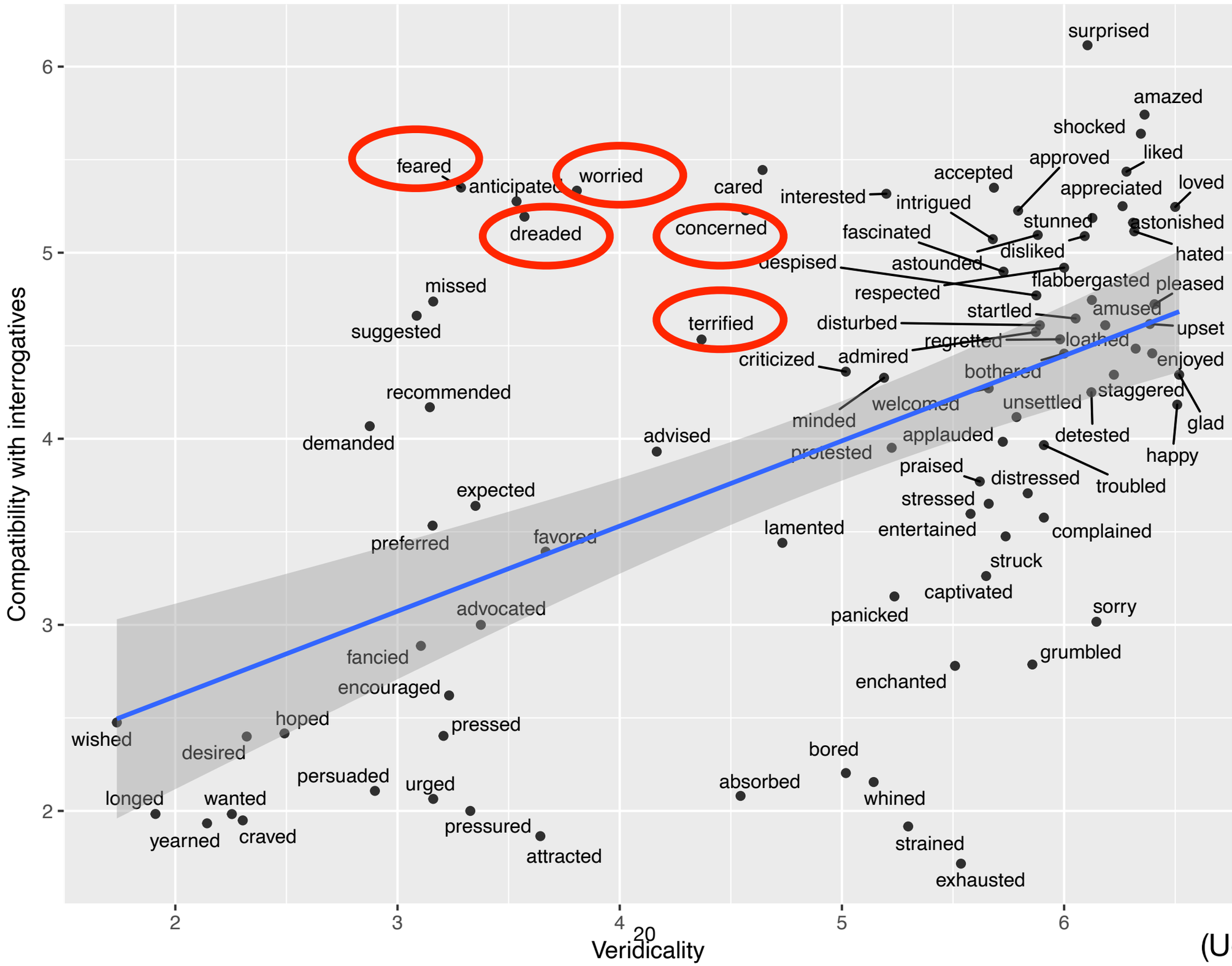
Results



Significant effect of Veridicality on Compatibility with interrogatives ($p = 0.00154$; mixed-effects logistic regression).

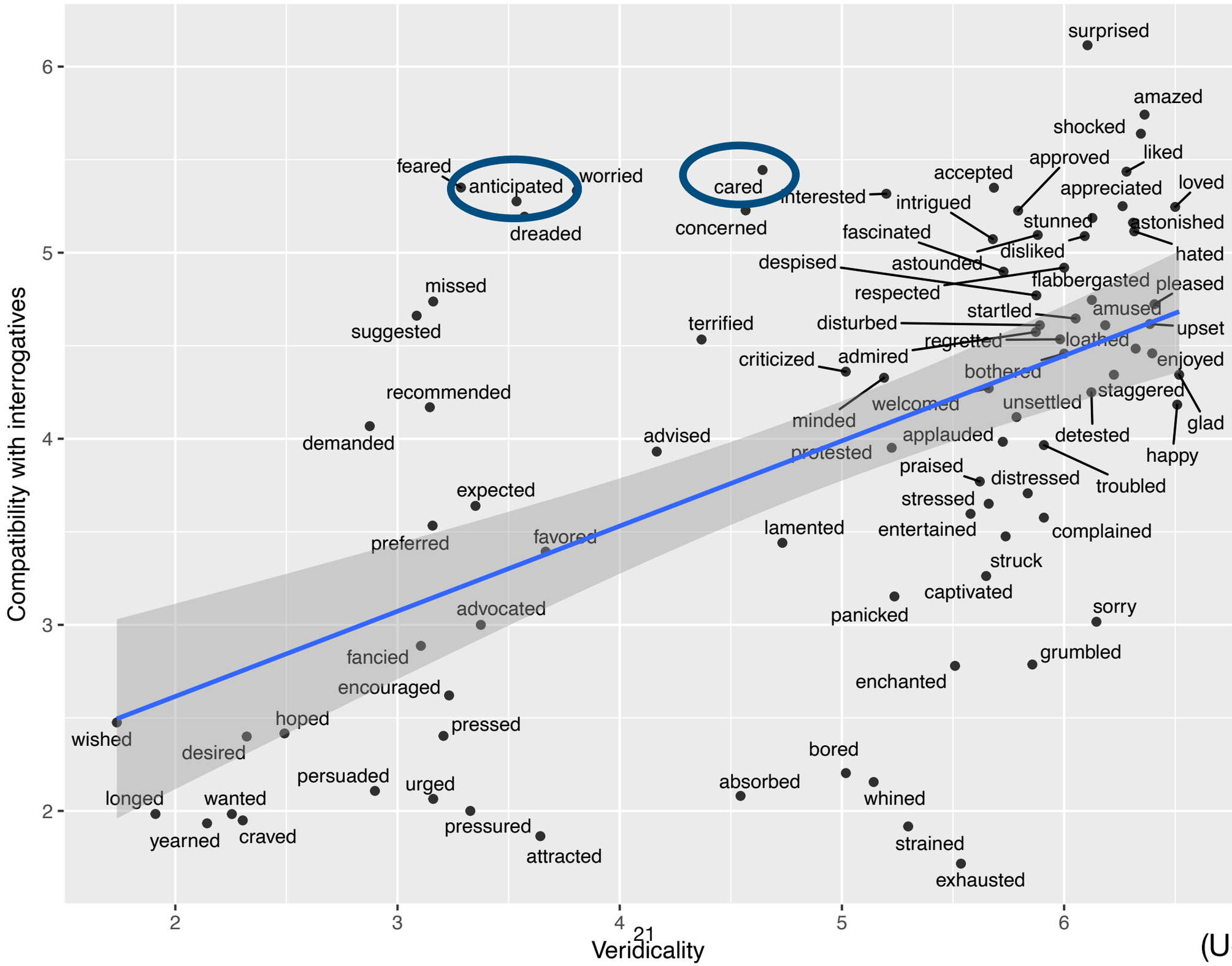
(Uegaki 2022a)

Negative preferentials: Systematic counterexamples?



(Uegaki 2022a)

Negative preferentials: Systematic counterexamples?



(Uegaki 2022a)

White (2021)

Attested *fear-whether* examples

(1) Interstellar space is so vast that there is no need to **fear whether** stars in the Andromeda galaxy will accidentally slam into the Sun.

(2) I **fear whether** this test would run safely on the oxygen sensor as it has a lot of drawback when compared with the others.

(3) […] I **fear whether** I'll have use of my arms/hands by age 55 or 60.

(4) I know parents who seriously **fear whether** their children will ever hold a meaningful job.

White (2021)

Attested *hope-whether* examples

(1) This Trump/Carson boom really has people like Bush, Walker, Rubio, and others wondering and **hoping whether** history will repeat itself and whether Republicans will return back to focusing on the establishment choices but it's all about outsider candidates right now.

(2) I was **hoping whether** you are able to guide me [...]

(3) I have done a quite a bit of research on using a Limited Co but was **hoping whether** someone with more experience could confirm my understanding of a few points […]

I will set these aside, but see Qing et al. (under revision):

- Anecdotally, degraded in comparison with *fear-whether.*
- *Hope whether p* ≈ *Hope that p*
- "inquisitive" flavour: *hope whether p* ≈ *wonder hopefully whether p*

Analysing the counterexamples

Two types of counterexamples

(1) ⟦x **hopes**$_C$ ϕ⟧

- **Presupposes**: there is a proposition in C that x prefers
- **Asserts**: there is a ~~true~~ proposition in ⟦ϕ⟧ that x prefers

Two ways in which the template does not apply:

1. The predicate *lacks the Threshold Significance Presupposition* while having a similar assertive component to (1).

2. The predicate has a semantics that is *Q-to-P non-distributive*, where “x Vs Q” ⇏ there is a p to Q such that x Vs that p.

Negative prefs lack threshold significance

- **Threshold significance**: Preferential predicates presuppose that there is a proposition in the comparison class that exceeds the threshold of preference.

(1) **Context**: It is common knowledge that Xander knows who will dance. Yolanda knows that there is no particular person Xander will hate it if they dance. You ask Yolanda: "How does Xander feel about who will dance?"

a. You: How does Xander feel about who will dance?
Yolanda: Xander doesn't **hate/** isn't **upset about** who will dance.

b. You: Does/Is Xander **hate/upset about** who will dance?
Yolanda: No

- **Negative preferentials lack threshold significance**. ⇒ no logical triviality

(2) ⟦Xander fears$_C$ who will dance⟧

- ~~**Presupposes**: there is a proposition in {A,B,C} that x disprefers~~
- **Asserts**: there is a proposition in {A,B,C} that x disprefers

(Klochowicz 2022; Uegaki 2023)

Q-to-p non-distributive predicates

A clause embedding predicate V is **Q-to-p distributive** iff for any embedded interrogative Q, ⌜x V Q⌝ entails that there is an answer p to Q s.t. ⌜x V p⌝ is true.

Elliott, Klinedinst, Sudo, and Uegaki (2017) on *care*

With a decl clause *p*, *care* presupposes that the attitude holder believes *p*.

(1) Mary {**cares**/does not **care**} that John left.

⇒ Mary believes that John left.

In contrast, (2) can be true even when there is no answer *p* s.t. the att holder believes *p*, i.e., when the att holder is totally ignorant.

(2) Mary **cares** which student left.

(3) Mary **cares** which student left and wonders which student left.

Elliot et al.: the semantics of *care* encodes a **question-oriented** attitude.

Worry: a Q-to-p non-distributive NVP

(1) Mary **worries** that John didn't go to school yesterday.

⇏ John didn't go to school yesterday

- *Worry* is Q-to-p non-entailing

(2) **Context**: Al's father recently bought a new boat and is planning to visit Amsterdam with it. He is sure that there must be a place in Amsterdam where he can dock his boat, and he would be happy to dock his boat anywhere. However, for any specific place, he does not know whether it still has spots available, and he is anxiously trying to find out where exactly he can dock his boat.

- Al's father **worries** where he can dock his boat. TRUE

However, there is no place Y such that (2) is true.

- Al's father **worries** that he can dock his boat at Y.

⇒ Al's father considers him being able to dock his boat at Y undesirable.

Positive Q-to-p non-distributives

- Mandarin *qidai* “look forward to”

Hen qidai [ta hui zenyang quanshi zhege xinde juese].
very QIDAI he will how interpret this new character
“I (very much) look forward to (seeing) how he will interpret/portray this new character.”

⇏ there is a way s.t. I look forward to him interpreting the new character in that way.

- Japanese *tanosimi-ni suru* “look forward to”

[Kotosi-wa dare-ga MVP-o toru-no-ka] tanosimi-desu-wa.
this.year-TOP who-NOM MVP-ACC win-NMZ-Q fun-COP.POL-PARTICLE
“I look forward to who will win the MVP this year.”

⇏ there is a player s.t. I look forward to them winning the MVP this year.

Interim summary: two types of counterexamples

- **Evaluatively negative preferential predicates: *fear***
  - Lack threshold significance ⇝ no triviality
  - Why does negativity correlate with threshold significance? Perhaps: a decompositional analysis of antonyms.
    - *fear = LITTLE hope*
- **Q-to-p non-distributive predicates: *worry,* Mandarin *qidai***
  - The predicate has a question-oriented semantics

    ⇝ the template deriving the triviality does not apply.

Interim summary: classification of NVPs

	Positive	Negative
Q-to-p distributive	*wh	the lack of TSP ⇝ ✔? wh
Q-to-p non-distributive	Q-oriented semantics ⇝ ✔? wh	Q-oriented semantics ⇝ ✔? wh

✔?: the combination is not necessarily ungrammatical.

A database for cross-linguistic testing

The MECORE database

- MECORE: A cross-linguistic investigation of **ME**aning-driven **CO**mbinatorial **RE**strictions in clausal embedding

  - Özyıldız, Ciyang Qing, Floris Roelofsen, Maribel Romero & Wataru Uegaki

- We have constructed a database that references the semantic and combinatorial properties of ±50 predicates in 16 languages.

- It contains machine-readable data in a table format, and a text document describing finer-grained aspects of attitude reports per language.

- This allows the assessment of existing generalizations about the correlations between lexical semantics and combinatorial restrictions and the formulation of new ones in a cross-linguistically informed way.

https://wuegaki.ppls.ed.ac.uk/mecore/mecore-databases/

MECORE

Cross-linguistic investigation of meaning-driven combinatorial restrictions in clausal embedding

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MECORE DATABASES

SIGTYP 2023: The database contains information about ~50 clause embedding predicates in 16 languages: Catalan, Dutch, English, French, German, Greek, Hebrew, Hindi, Italian, Japanese, Kîîtharaka, Mandarin, Polish, Spanish, Swedish and Turkish.

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A Crosslinguistic Database for Combinatorial and Semantic Properties of Attitude Predicates

Deniz Özyıldız, Ciyang Qing, Floris Roelofsen, Maribel Romero, Wataru Uegaki

PDF Cite Search Video

Abstract

We introduce a cross-linguistic database for attitude predicates, which references their combinatorial (syntactic) and semantic properties. Our data allows assessment of cross-linguistic generalizations about attitude predicates as well as discovery of new typological/cross-linguistic patterns. This paper motivates empirical and theoretical issues that our database will help to address, the sample predicates and the properties that it references, as well as our design and methodological choices. Two case studies illustrate how the database can be used to assess validity of cross-linguistic generalizations.

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Design principles

Goal: To cross-linguistically assess (a) correlations between semantic and combinatorial properties of attitude predicates and (b) purely semantic universals about attitude predicates.

Principles: The database has to contain information about:

- representative **attitude predicates** in each language;
- relevant **semantic properties** of the predicates in a format that allows cross-linguistic comparison;
- relevant **combinatorial properties** of the predicates in a format that allows cross-linguistic comparison; and
- detailed **examples** that motivate the property values

Example: Part of the Dutch database

Table

Predicate	English translation	Veridicality/ Anti-veridicality	...	Finite declaratives	Finite *which* interrogatives	...
vergeten	*forget*	always veridical	...	acceptable	acceptable	...
ongelijk hebben	*be wrong*	always anti-veridical	...	acceptable	acceptable	...
geloven	*believe*	neither	...	acceptable	unacceptable	...
zich afvragen	*wonder*	NA	...	unacceptable	acceptable	...
...	...	...	...	...	...	

Text document

37 Vergeten 'forget'

37.1 Semantic properties

Vergeten is **always veridical w.r.t. declaratives**: sentence (1260) always implies that Peter teaches syntax on Tuesday.

(1260) Anne is vergeten dat Peter op dinsdag syntax geeft.
Anne is forgotten that Peter on Tuesday syntax gives
'Anne forgets that Peter teaches syntax on Tuesday.'

- Average page length: 315 pages

Semantic properties: examples

- A sample of semantic properties proposed to correlate with different combinatorial properties.
- **Veridicality**
  - Alice Vs that it's raining. ?⇒ It's raining.
- **Preference / Opposition**
  - Alice Vs that it's raining
    - ?⇒ Alice prefers the possibility that it is raining over the possibility that it is not raining.
    - ?⇒ Alice prefers the possibility that it is not raining over the possibility that it is raining.
- **Q-to-P distributivity**

Semantic properties: full list

Semantic properties	Response options
Veridicality†	veridical, anti-veridical, neither
Conjunction with negation of the complement	contradictory, redundant, neither
Conjunction with the complement	contradictory, redundant, neither
Complement projection/reversal through negation†	projective, reversive, neither
Neg-raising†	neg-raising, non-neg-raising
Subject's {likelihood / unlikelihood / equal likelihood} estimation towards complement	always implies, typically implies, compatible, incompatible
Subject's {certainty / counter-certainty / uncertainty} towards complement	always implies, typically implies, compatible, incompatible
Subject's {preference / opposition / indifference} towards complement	always implies, typically implies, compatible, incompatible
Focus sensitivity	focus-sensitive, non-focus-sensitive
Grammatical gradability with declaratives	gradable, non-gradable, undecided
Belief/ignorance implications w.r.t. interrogatives†	belief-, ignorance-implying, neutral
Grammatical gradability w.r.t. interrogatives	gradable, non-gradable, undecided
Q-to-P veridicality†	veridical, anti-veridical, neither
Q-to-P distributivity†	distributive, non-distributive
P-to-Q distributivity†	distributive, non-distributive

† indicates properties with a graded response: typically/always {veridical, projective, neg-raising. . . }

Combinatorial properties: list for English

Combinatorial properties	Response options
Finite & non-finite declaratives; Finite & non-finite interrogatives (polar, alternative, *which*, *who/what*); Concealed questions; Intransitive use	✓, *, ?/??/???, *(X), undecided

- Response options:
  - ✓: acceptable
  - *: unacceptable
  - ?/??/???: degraded
  - *(X): extra material (preposition/particle/etc.) required
  - undecided
- Some languages make fewer or additional clause-type distinctions (e.g., mood or complementizer distinctions).

Predicates: 48 Eng predicates

Class	Verbs
Communication	*accept*, *announce*, *argue*, *assert*, *claim*, *complain*, *deny*, *explain*, *inform*, *tell*, *whisper*, *write*
Doxastic	*agree*, *assume*, *believe*, *(be) certain*, *(be) convinced*, *doubt*, *expect*, *forget*, *know*, *learn*, *prove*, *(be) right*, *suspect*, *think*, *(be) unaware*, *(be) wrong*
Perception	*see*
Directive	*decide*, *demand*, *order*, *propose*
Emotive	*fear*, *(be) happy*, *hope*, *pray*, *prefer*, *regret*, *(be) surprised*, *want*, *(be) worried*
Inquisitive	*ask*, *(be) curious*, *inquire*, *investigate*, *wonder*
Relevance	*care*

Languages and consultants

Currently, the database has 17 languages from different families:

- Dutch, English, German, Swedish
- Catalan, French, Italian, Spanish
- Greek
- Hindi
- Hungarian
- Polish
- Turkish
- Hebrew
- Japanese
- Kĩĩtharaka (Niger-Congo > Bantu, Kenya)
- Mandarin

- Data collection ongoing: Akan (Niger-Congo > Kwa, Ghana)

Data collection procedure

- Consultants first translate English predicates into their language.
    - If no direct translation exists, they were encouraged to consider predicates similar in meaning.
- Then they annotate predicates' semantic & combinatorial properties
    - Using a questionnaire and predicate-specific notes that we designed (https://osf.io/vd8mg/)
    - Each consultant spent 60 to 100 hours and met regularly with at least one of the authors during this process in order to clarify difficult judgments or resolve possible complications

A sample question from the questionnaire

Q6″ Preferentiality implications w.r.t. declaratives

(14) Ann P' that it is raining.

- Consider the three kinds of scenarios described by the three columns below:
  - 6G (column **preference**): Ann prefers the possibility that it is raining over the possibility that it is not raining.
  - 6H (column **opposition**): Ann prefers the possibility that it is not raining over the possibility that it is raining.
  - 6I (column **indifference**): Ann is indifferent as to whether it is raining or not.
- For each column, there are four possible responses: **incompatible**, **compatible**, **typically**, and **always**

- Responses to Preference, Opposition, and Indifference have to be mutually consistent

Cross-linguistic testing for preferentials

Operationalising the prediction

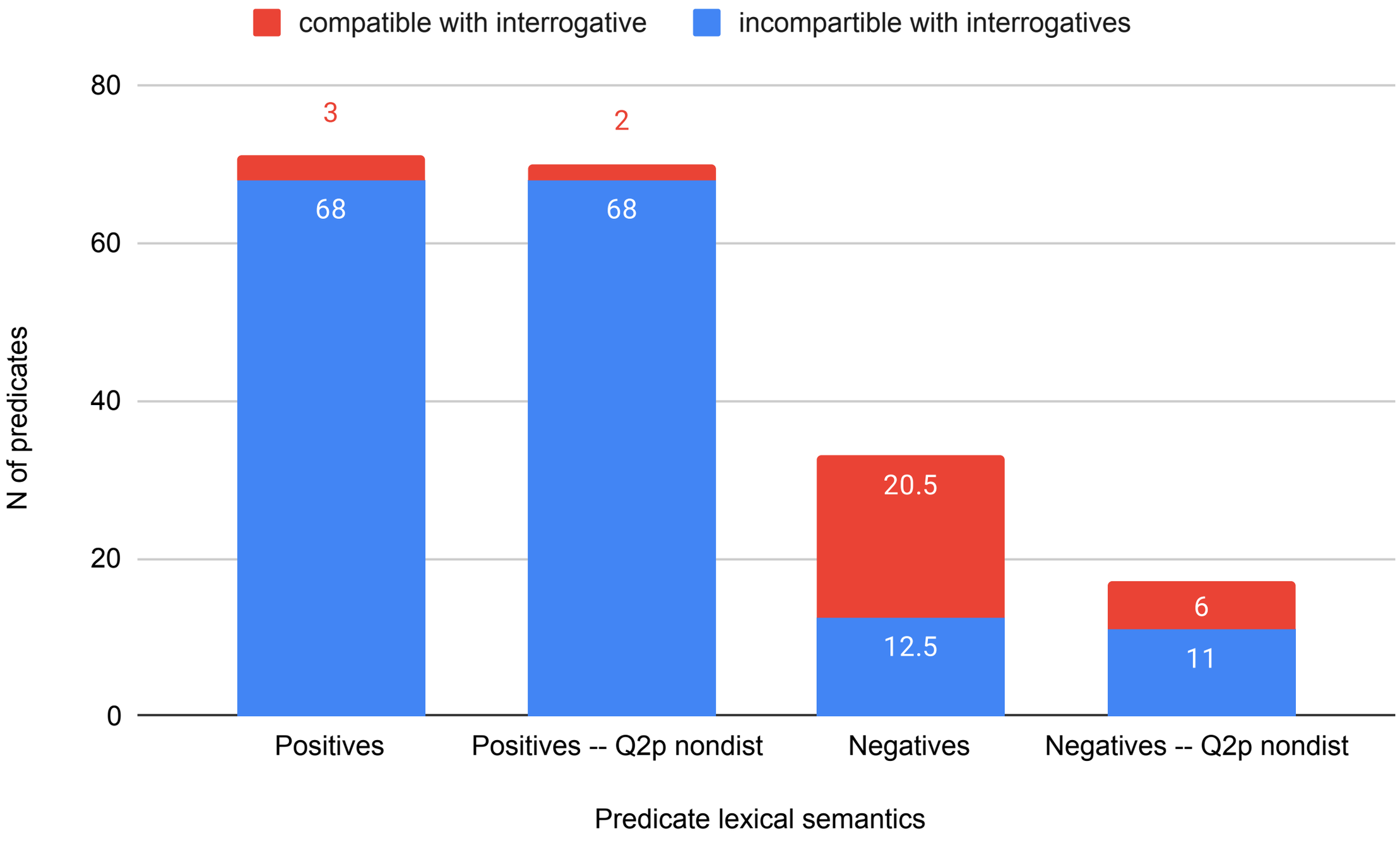
- **Relevant semantic properties**
  - Preferentiality/Opposition
  - Veridicality
  - Q-to-p entailment

NVPs	Positive	negative
Q-to-p distributive	*wh	✔? wh
Q-to-p non-distributive	✔? wh	✔? wh

- **Relevant clause type:** d-linked constituent interrogatives

- **Prediction**: Among predicates that are *not* Q-to-p non-distributive (i.e. Q-to-p distributive or incompatible with wh),
  - *Preference-entailing* non-veridical predicates are incompatible with d-linked constituent interrogatives;
  - but this is not necessarily the case for *opposition-entailing* non-veridical predicates

Compatibility with interrogative comps relative to positivity/negativity & Q-to-p distributivity



Examples of positive NVPs with *wh*

Hebrew *lehaadíf* "prefer"

- Judged to be Q-to-P non-distributive

(1) án **maadifá** éjze séfer máks jikrá
Ann prefer.PRES.3.SG.FEM which book Max read.FUT.3.SG.MSC
'Ann has a preference about which book Max will read.'

Kiitharaka *îrîgîra*: ambiguous between "hope" and "expect".

- Judged to be non-focus sensitive

(2) Gaceri ni-a-kû-**îrîgîra** ni-îbuku rîrîkû Baraka a-gûrire
Gaceri COP-1SM-PRES.PROG-hope FOC-book which Baraka 1SM-bought
lit. 'Gaceri hopes which book Baraka bought.'
Meaning: 'Gaceri has a hope about which book Barak bought.'

Greek *protino* "propose"

- Preferentiality questionable? Subjunctive *na* required.

(3) Mas protine pjo vivlio na dhiavasume.
to.us proposed which book SUBJ read.PERF
'S/he proposed to us which book to read/we should read.'

Examples of negative NVPs with *wh*

- Hungarian *fél* “fear”

(1) Anna fél attól, hogy mi lesz vele
Anna fear.PRS.3SG that.ABL that what COP.FUT.SG3 3SG.INSTR
‘Anna fears what will happen to her.’

- Kiitharaka *kuthûka* “fear”

(2) Gaceri n=a-gû-kuthûka n=îbuku rîrîkû Baraka a-gûrire.
Gaceri COP=1SM-PRES.PROG-fear FOC-book which Baraka 1SM-bought.
‘Gaceri fears which book Baraka bought.’

Conclusions

Conclusions

- **Question**: How exactly does the semantics of clause-embedding predicates affect selectional restrictions?
- **Empirical focus**: Non-veridical preferential predicates.
- **Theoretical analysis**: non-veridical preferential predicates combined with interrogative clauses are logically trivial.
- **Behavioural experiment**: confirms the general prediction but with counterexamples.
- **Analysis of counterexamples:**
  - Negative NVPs ⇝ No TSP
  - Q-to-p non-distributive NVPs ⇝ question-oriented semantics
- **Cross-linguistic testing**
  - Effect of evaluative positivity/negativity on the compatibility with interrogative complements.

Implication and next steps

- **Implication:** The lexical semantics of clause-embedding predicates affect their selectional restriction in fine-grained ways.

- **Further questions**:
  - Why does evaluative positivity/negativity correlate with the presence/absence of Threshold Significance Presupposition?
  - What is the precise mechanism in which ungrammaticality is derived from logical triviality? (see Qing & Uegaki 2024, AC)
    - The relevant notion of triviality is dependent on presupposition.
    - To what extent are attitude predicates a part of *logical* vocabulary?
  - A non-canonical composition strategy?
    - *Hope whether p ≈ wonder hopefully whether p*

      (see Qing et al. 2024; Özyıldız & Uegaki 2023; 2024)

Thank you!

Structure of the whole database

```
SIGTYPdatabaseV0
├── Japanese
│   ├── readme.md
│   ├── JapaneseTableJpn001V0.csv
│   └── JapaneseTextDocumentJpn001V0.pdf
├── French
│   ├── readme.md
│   ├── FrenchTableFra001V0.csv
│   ├── FrenchTextDocumentFra001V0.pdf
│   ├── (FrenchTableFra002V0.csv)
│   └── (FrenchTextDocumentFra002V0.pdf)
├── Turkish
│   └── ...
└── ...
```