

Three ways of not being lucky

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SALT 24 at NYU
May 30, 2014



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Language and Natural Reasoning

I will be discussing three ways of interpreting sentences where the adjective *lucky* occurs with an infinitival clause. An example of the literal use of *lucky* is *You were lucky to get into Stanford*. In the future tense, *You'll be lucky to get into Stanford*, the sentence could have the literal sense but it is most likely interpreted as a pessimistic prediction: You probably will not get into Stanford. The idiomatic interpretation is not always available. What does it depend on?

The literal interpretation is also problematic. A positive sentence like *You were lucky to get into Stanford* implies that you got into Stanford although the odds were not in your favor and that you did or will benefit from your stay at Stanford.

But what does its negation, *You were not lucky to get into Stanford*, mean? Or is it even grammatical? It could mean that you got into Stanford but you were not lucky or that you were unlucky and did not get into Stanford.

These are the three ways of not being lucky.

Outline

- **Background**
Presupposition, Conventional implicature
Factive and implicative verbs
- *NP is not lucky to VP* - what does it mean?
Is it even grammatical?
Factive or implicative?
Are there two dialects?
- **Amazon Mechanical Turk study**
Consonance/Dissonance effect
Three hypotheses, Results
- *NP will be lucky to VP* - 'probably not' idiom
- **Summary, Reflections**

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Here is an outline of the talk. The main issue is about the factive vs. implicative interpretation of *lucky*. I will start with a brief review of where these terms come from and how they are related to presuppositions and conventional implicatures.

I will then take up the different views concerning the status of negative sentences of the type *NP is not lucky to VP*. We will look at some examples, see where they come from. What the authors intended to convey. Since both factive and implicative interpretations are found in the wild, one explanation could be that there are two dialects that have different semantics for this adjective. But *lucky* is not alone. Adjectives like *stupid*, *clever*, and *brave* are also involved.

Together with my colleagues at CSLI we conducted an extensive study on the Amazon Mechanical Turk to try to determine how people interpret sentences with evaluative adjectives. The results suggest that there are two dialects and the interpretation of particular examples is influenced by what we call a CONSONANCE/DISSONANCE effect. That phenomenon is an interesting unexpected discovery.

Finally, I will turn to the idiomatic sense of *lucky*. It has structural constraints but in addition it also depends on the perceived intent on the speaker.

The challenge in this data for semantic theory is that the interpretation of the sentence crucially depends on factors that are not part of the lexical meaning of particular words or the syntactic construction.

Presupposition

- Eubulides (4th c. BCE)
Have you lost your horns?
- Frege (1892)
Kepler died in misery. The name 'Kepler' designates something.
- Russell (1905)
The present king of France is bald. **FALSE!**
- Strawson (1950) **Neither true nor false.**

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The Greek philosophers already knew about presuppositions, Eubulides' example is the forerunner of the familiar *Have you stopped beating your wife* example. Eubulides is also known for the Liar Paradox.

In the modern logical literature the concept first comes up in Frege's "Sinn und Bedeutung" paper where he argued that proper names presuppose that they designate something. If there is no Kepler, any sentence with the name Kepler is meaningless, neither true nor false. In Russell's system, anything with *the present king of France* is just false. Strawson argued against Russell and agreed with Frege. But then linguists took over the notion of presupposition from philosophers and in just a few years they created...

A Zoo of presupposition triggers

Proper names	Kepler
Definite descriptions, possessives	my bicycle
Quantifiers	both, neither
Aspectual verbs	start, continue, stop
Factive verbs and adjectives	regret, tragic
Simple and phrasal implicatives	manage, fail
Repetitive expressions	renew, again
Reason clauses	since, because, as
Temporal adverbs	still, already, yet
Anaphoric particles	too, either, also
Focus particles	only, even
Wh-questions	who, where, why ...
Comparisons	as ... as ...
Clefts, and pseudo-clefts	It was NP who...
Non-restrictive adjectives, relative clauses	the N, who VP, ...
Temporal clauses	after, since ...
Appositives	Lance, a cyclist, ...

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By the early 1970s we had a zoo of presupposition-like phenomena, all supposedly of the same species.

That was a fundamental error. Separate cages should have been built for different types of 'presupposition triggers.' The quest of an all-encompassing theoretical account of presupposition has been a failure.

Presupposition Failure

There are several philosophically and linguistically interesting dimensions along with the set of presupposition triggers can be partitioned, such as referentiality, anaphoricity, ease of accommodation, ease of cancellation, and maintenance of truth under presupposition failure. So perhaps what will eventually emerge is not a straightforward dichotomy, but a more complex taxonomy of different types of trigger. **And at that point, perhaps we may re-ask the question of whether the things that the different so-called “presupposition triggers” are triggering are in fact presuppositions, in any of the theoretical senses of the term “presupposition” that we have considered in this article.**

David I. Beaver and Bart Geurts, “Presupposition”, *The Stanford Encyclopedia of Philosophy* (Fall 2013 Edition), Edward G. Zalta (ed.).

<http://plato.stanford.edu/archives/fall2013/entries/presupposition/>

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The article that Beaver and Geurts wrote on Presupposition for the Stanford Encyclopedia of Philosophy comes to the same pessimistic conclusion. The answer to the rhetorical question they ask at the end is a clear **No**. Luckily, for the rest of my talk today this does not matter. In the following when I talk about presupposition, what I have in mind is the Frege-Strawson concept.

But we also need another concept...

Conventional Implicature

- Frege 1918

“With the sentence

Alfred still has not come

one actually says ‘Alfred has not come’ and suggests at the same time that his arrival is expected, but it is only hinted at. One cannot say that the sense of the sentence is false because Alfred’s arrival is not expected.”

- Grice 1989

He is an Englishman; he is, therefore, brave.

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The idea of conventional implicature is usually attributed to Grice but Frege had the same concept in mind in his 1918 article “Der Gedanke” (The Thought). Among his examples are the German words *noch* ‘still’ and *schon* ‘already’. Such words are not irrelevant, Frege said, but they do affect truth or falsity of the thought. (What looks important to a mind that is concerned with the beauty of the language is irrelevant to a logician.)

Frege had it right in distinguishing between cases where the question of truth or falsity does not even arise and the cases where the speaker might suggest something that is wrong but in a way that has no bearing on the truth of what really matters. His German word for the former case, *Voraussetzung*, got translated into English as *presupposition* (and subsequently translated back to German as *Präsupposition*). It is good term for what Frege meant by it in either way.

It is a pity that Frege’s term for second case did not get picked up by anybody. The word that I translate here as *suggest* and *hint at* is a verb with a separable prefix, *an|deuten*. Starting out with a pair of terms, **SUGGESTION** contrasted with **PRESUPPOSITION**, might have made the story of presupposition less of a mess than it turned out. Grice’s term, *conventional implicature*, is cumbersome and requires a lengthy discussion of how conventional implicatures that Grice says very little about are different from conversational implicatures that Grice is justly famous for.

“I have certainly committed myself, by virtue of the meaning of my words, to its being the case that his being brave is a consequence of (follows from) his being an Englishman. But while I have said that he is an Englishman, and said that he is brave, I do not want to say that I have said (in the favored sense) that it follows from his being an Englishman that he is brave, though I have certainly indicated, and so implicated, that this is so. I do not want to say that my utterance of this sentence would be, strictly speaking, false should the consequence in question fail to hold.” (Grice 1989, p. 25)

Factives and implicatives

- C. & P. Kiparsky 1970 “Fact”

Factive verbs: [regret](#), [resent](#), [care](#), ...

Factive adjectives: [significant](#), [odd](#), [exiting](#), [curious](#), ...

- links factivity to presupposition
- introduces two standard tests for distinguishing between presupposition and entailment: negation and questions
- recognizes the ‘projection problem’ for presupposition

- L. Karttunen 1971 “Implicative Verbs”

Two types of two-way implicatives: [manage](#) and [fail](#)

Four types of one-way implicatives: [force](#), [prevent](#), [be able](#), [hesitate](#)

- two-way implicatives involve both entailments and [presuppositions](#) conventional implicatures

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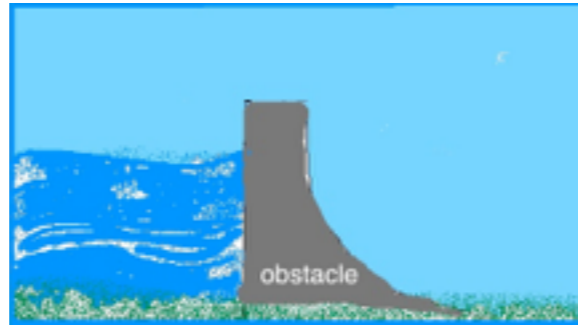
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The main thread of my story today starts in the late 1960s. The paper by Carol and Paul Kiparsky widely known became the standard reference on factive verbs and the beginning of the debate about the semantic and pragmatic visions of what presuppositions are about.

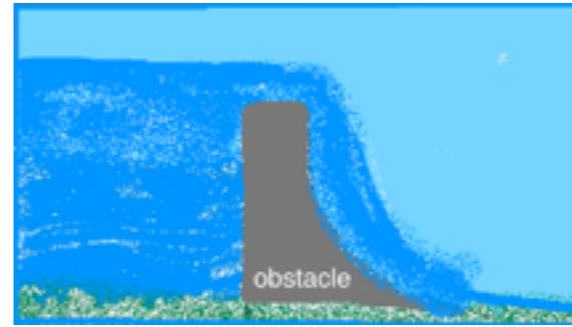
My 1971 paper in *Language* and a couple of follow-up papers on have far fewer references to them in the literature but they too have become the standard way of representing the meaning of the six classes of verbs with infinitival complements that the paper talks about. For example, you find them in works such as Bill MacCartney’s *Natural Logic* and other computational implementation of “natural reasoning”. It seems that this paper got most of the things it talks about mostly right. There has not been much to disagree with and write more papers about.

Verbs like [regret](#) are problematic in that they can be used in situations where the speaker is not committed to the truth of the complement in cases involving false beliefs: [Although Kim was not at fault, she believed that she was and regretted it.](#) However sentences with evaluative adjectives do pass the test of being presupposition triggers in the sense of Frege and Strawson. [It is fantastic that the Central Park is even larger than the Golden State Park](#) is neither true nor false because the complement clause is false.

Two-way implicatives



Water didn't manage to flow over.



Water managed to flow over.

Verb	Obstacle	Example
manage	difficulty	Water managed to flow over.
bother	indifference	She didn't bother to call me back.
dare	fear	They dared to venture out into the jungle.
deign	haughtiness	The duchess deigned to shake my hand.
remember	forgetfulness	Kim remembered to schedule a meeting.

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There are about a dozen two-way implicative verbs in English that give you a positive entailment under positive polarity and a negative entailment under negative polarity. These pictures illustrate how to think about their meaning. They all suggest — in Frege's sense — or conventionally implicate that there is some obstacle that must be overcome for the infinitival clause to be true. The positive statement entails that this happened, the negative statements entails it didn't happen thus the infinitival clause is false. The nature of the suggested obstacle varies from verb to verb. **Manage** is perhaps the least specific of the English verbs, it implicates that there is some unspecified difficulty to be overcome. **Bother**, **dare**, and **deign** indicate what kind of obstacle is involved. As far as plain truth is concerned, it does not matter whether the implied obstacle really exists. *The duchess deigned to shake my hand* is true if she did so and false otherwise, regardless of whether she really was haughty.

Implicative verbs are not a speciality of English. Other languages have them and Finnish maybe has the richest inventory.

Finnish two-way implicatives

Verb	Obstacle	Finnish	English
hennoa	empathy	Hennoitko tappaa kissan?	Did you overcome your pity to kill the cat?
iljetä	disgust	Hän ei iljennyt katsoa.	She did not overcome her disgust to look.
joutaa	commitments	Hän ei jouda tulemaan.	He is too busy to come.
maltaa	impatience	Hän malttoi odottaa.	She overcame her impatience to wait.
kehdata	embarrassment	Hän kehtasi olla alasti.	He overcame his embarrassment to be naked.
ennättää	lack of time	Hän ennätti leipoa kakun.	She managed to have time to bake the cake.
tarjeta	coldness	En tarjennut uida.	I couldn't stand the cold to swim.

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Some of these obstacles are psychological as with [hennoa](#) that involves pity or empathy that has to be overcome to do something cruel like killing a cat. Some impediments are external as in the case of [tarjeta](#) that has to do with it possibly being too cold for some activity. For a Nordic language like Finnish, it is convenient to have a single verb to pack this meaning into. But too many commitments, disgust, impatience, embarrassment, and lack of time are quite universal impediments to getting things done. Having a specific implicative verb available for so many obstacles makes Finnish a great language for pithy excuses.

Factive and implicative *remember*

- Factive

Kim remembered that she had scheduled a meeting.

Kim didn't remember that she had scheduled a meeting.

- *remember that* PRESUPPOSES that she had scheduled a meeting.

- Implicative

Kim remembered to schedule a meeting.

- *remember to* ENTAILS that Kim scheduled a meeting.

Kim did not remember to schedule a meeting.

- *not remember to* ENTAILS that Kim did not schedule a meeting.

Did Kim remember to schedule a meeting?

Of course *schedule a meeting* and *remember to schedule a meeting* are not equivalent. Like Frege's *still* the *remember to* construction conveys something, namely that there was an intention or expectation that Kim would schedule a meeting that she might have forgotten about. But if that suggestion, CONVENTIONAL IMPLICATURE, turns out to be false, it is not fatal as the presupposition failure is in the case of *remember that*. If you ask *Did Kim remember to schedule a meeting?* you are just asking whether she scheduled a meeting. The *remember to* construction implies that she might not have overcome forgetfulness. But that is not the point of the question.

It is not about *that* vs. *to*

- **turn out that** and **turn out to** are both implicative

It did not turn out that it was what I wanted to do.

It did not turn out to be what I wanted to do.

ENTAIL that it was not what I wanted to do.

- **be bad that** and **be bad to** are both factive

It wasn't bad that we had one day of rain on our trip.

It wasn't bad to have one day of rain on our trip.

PRESUPPOSE that we had one day of rain on our trip.

Factive and implicative *lucky*

NP was lucky to VP

commits the speaker to the view that *NP VPed*. But it is not self-evident whether this is a **presupposition** or **entailment**. Need to know what

NP was not lucky to VP

means. Is it

Factive: *NP VPed* (but *NP* was not lucky)

Implicative: *NP did not VP* (NP would have been lucky if he had *VPed*)

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Having shown that verbs like **remember** have a factive and an implicative reading depending on the type of complement, I will now try to convince you that evaluative adjectives, in particular **lucky**, can be understood in two ways, either as factives or as implicatives, with an infinitival clause. This is controversial. It contradicts the received wisdom on these adjectives.

If **lucky** is a factive adjective, then *NP was not lucky to VP* means that *NP VPed* but was not lucky, that is, either the odds were actually in the *NPs* favor or there was no benefit in *VPing*.

If **lucky** is an implicative adjective, then *NP was not lucky to VP* means that *NP did not overcome the odds against VPing*, hence didn't *VP*, but would have been lucky if he had *VPed*.

Factive vs. Implicative

- Factive:

You are right he is lucky to get the property but *he is not lucky to have to pay for it* when he hasn't got a tenancy agreement, keys, or even seen the property.

<http://forums.moneysavingexpert.com/showthread.php?t=4221491>

- Implicative:

Only a week before Urbina was due in court to face charges for his alleged rape of a waitress, police believe that he claimed another victim. This time, *the girl was not lucky to get away alive*.

<http://www.familybailbonds.com/blog/2014/02/fbi-most-wanted-fidel-urbina/>

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Here are two examples from the web. The first one from a British forum discussion, the second from a blogger in Los Angeles. These are convincing to me but not to everyone.

Factive vs. Implicative in conditionals

- Factive:

I will ask if *we are not lucky to have gays coming along* in this time of population related problems?

<http://voices.yahoo.com/malawians-not-play-god-gays-8559669.html>

- Implicative:

In this way, no female student felt neglected if *she was not lucky to be randomly picked* to participate in the experiment.

<http://www.questia.com/read/1P3-1338356891/differences-between-resources-and-strategy-in-strategic>

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For reasons I don't understand yet, if-clauses of the type *if NP was not lucky to VP then S* that you find on the web nearly always are meant to have the implicative reading: *if NP did not VP then S*. The example about gays coming along is the only factive example I have come across so far.

Ungrammatical?

He is not lucky to enjoy the luxuries of life with his limited income.

Anyway I was not lucky to get a table this trip. Maybe next time.

Unfortunately, Pakistan has not been lucky to have genuine leaders after the demise of Quaid-i-Azam.

At thirty-one, Esther had not been lucky to find a man to marry her.

Examples from my 2013 paper “You will be lucky to break even.”

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These examples, all collected from the web, are from my 2013 paper *You will be lucky to break even*. They elicited a strong push-back from some eminent colleagues of mine, including Larry Horn and Craige Roberts, who told me that these examples were just not grammatical in English. They would be OK if [lucky](#) was replaced with [lucky enough](#). This prompted me to look at the URLs that these examples came from and trace down the author and his or her nationality. It is amazing how much you can learn from the footprints people leave on the internet. This is what I found...

“World English” examples

He is not lucky to enjoy the luxuries of life with his limited income.

Preethaanju, India (blogger)

Anyway I was not lucky to get a table this trip. Maybe next time.

Melaka Living, Malaysia (travel writer)

Unfortunately, Pakistan has not been lucky to have genuine leaders after the demise of Quaid-i-Azam.

Mohammad Jamil, Pakistan (political commentator for *Daily Times*)

At thirty-one, Esther had not been lucky to find a man to marry her.

Aba Saheed, Nigeria (political columnist)

Examples from my 2013 paper “You will be lucky to break even.”

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It turned out that this set of examples that my fellow semanticists did not accept as grammatical, all came from the outskirts of the former British empire. But their texts seemed free of any disfluencies or errors of grammar. Could it be that there is a split between **WORLD ENGLISH** where *NP is not lucky to VP* is implicative and **TRADITIONAL ENGLISH** spoken by many of my fellow linguists such as Larry Horn and Craige Roberts where *NP is not lucky to VP* is factive or just ungrammatical?

US/UK examples

This time, the girl was not lucky to get away alive.

Tonya Page, Los Angeles (blogger, co-owner of a bail bonds business)

I still have not been lucky to manage to get my orchids to flower again.

Gillygirl, UK? (Senior member on Woman & Home Forums)

If you are not lucky to get on a group tour, there are tours available on a first-come, first-served basis at 10AM and 1PM for 10 people only.

Carol King, Maryland (Administrator for AmVets National Ladies Auxiliary)

Tropical was the third flavor I ended up buying when I first started. I was not lucky to have the shakeology sampler available to try them all out at a lower cost.

Christopher Azzari, Boonton, NJ (IT professional, fitdadchris.com)

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These examples were authored by people who live in the US or UK and apparently are not speakers of some non-native variety of English. It does not appear that there is a geographical split between TRADITIONAL ENGLISH and WORLD ENGLISH.

Other evaluative adjectives

stupid

Michigan was not stupid to go for the win. (They did but lost.)

She was not stupid to fall for that trick. (She didn't.)

clever

You were not clever to have bought them when you did. (You did.)

She's not clever to come up with something like this on her own. (She doesn't.)

brave

He was not brave to say it, he had no choice. (He said it.)

I was not brave to venture out alone. (I didn't.)

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[Lucky](#) is not alone! Other so-called evaluative adjectives show the same factive/implicative split under negation. Here are some examples, picked from the web in a context that unambiguously shows what interpretation the author has in mind.

Cleo Condoravdi, Stanley Peters, Annie Zaenen, and I decided to do an experiment to find out more about this phenomenon.



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In the Spring and Summer of 2013 we conducted seven experiments on 19 evaluative adjectives. Each experiment elicited judgements of 20-30 sentences. Altogether about 1000 HITs (Human Intelligence Tasks) were done by over 900 "Turkers". We made up close to 700 test sentences.

We were lucky in that the very first test that we ran on *stupid* and *clever* turned up an interesting effect that proved to be robust and gave us a way to test the idea that there might be two dialects. Here's the effect...

Consonance/dissonance effect

stimulus	adjective - complement relation	answers	Interpretation	%
R. was not clever to choose the best piece.	choosing the best piece is clever CONSONANT	R. chose the best piece.	F	25
		R. did not choose the best piece.	I	64.2
		undecided		10.7
R. was not clever to choose the worst piece.	choosing the worst piece is not clever DISSONANT	R. chose the worst piece.	F	80
		R. did not choose the worst piece.	I	10
		undecided		10
K. was not stupid to save money.	saving money is not stupid DISSONANT	K. saved money.	F	78.6
		K. did not save money.	I	14.2
		undecided		7.1
K. was not stupid to waste money.	wasting money is stupid CONSONANT	K. wasted money.	F	28.6
		K. did not waste money.	I	66.7
		undecided		4.8

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The test sentences that the subject saw are in BLUE in the first column. The task for the subject was decide whether the author meant that the complement clause was true or did he mean that it was false. For example, when the subject saw the sentence *Robin was not clever to choose the best piece*, he had to guess whether the author meant that *Robin chose the best piece* or that *Robin did not choose the best piece* by clicking on a button. There was also a third button for the option *Cannot decide*.

The answers in RED are the alternatives that the majority of the subjects chose. 64.2% of the respondents chose the implicative I option indicating that they thought that, if Robin was not clever to choose the best piece, he did not choose the best piece. 25% chose the factive F option indicating that for them, if Robin was not clever to choose the best piece, he chose the best piece. Only 10.7% indicated that they could not decide what the author meant.

But if we switch *the best piece* to *the worst piece*, the factive interpretation wins by a wide margin: 80% vs. 10% for the implicative choice. In other words, if Robin was not clever to choose the worst piece, he chose the worst piece.

What seems to matter in these kinds of example is the perceived relation between the adjective and the complement clause. For most of us, *choosing the best piece is clever*, this is what we call a CONSONANT relation, *choosing the worst piece is not clever*, we call a DISSONANT relation.

What the table shows is that a CONSONANT relation between the adjective and the infinitival clause favors the implicative reading of the *NP is not Adj to VP* construction, a DISSONANT relation favors the factive interpretation.

The lower half of the table shows the same pattern. The adjective *stupid* and *saving money* are in a DISSONANT relation. Most people would agree that saving money is not stupid but wasting money is. Again we see that the dissonant case, *Kim was not stupid to save money* favors the factive reading, Kim saved money. The consonant relation, *Kim was not stupid to waste money* favors the implicative alternative, *Kim did not waste money*, by more than 2-1 ratio.

Why the Cons/Diss effect?

- Coherence hypothesis

People try to interpret the discourses they are confronted with as coherent. If it is assumed that wasting money is a stupid thing to do, it would be incoherent to imply that the protagonist is not stupid doing it. When confronted with a sentence of this type, people prefer to interpret the speaker to mean the wasting money did not happen.

- To waste money is stupid.
- Kim was not stupid.
- Kim did not waste money.

Biconditional

Kim was stupid to waste money. ↔ Kim wasted money.

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The Coherence hypothesis was first articulated by Annie Zaenen.

The effect also shows up in the sentences people spontaneously produce. I have actually shown it already in the [lucky](#) examples I have presented but the effect is not easy to see unless you know to look for it. To demonstrate it I have picked two selections of [lucky](#) examples from the web with enough context around them that it is clear whether the author intends to convey the factive or the implicative meaning. See the next two slides.

Dissonant and Factive

It does sound like our diagnoses are very similar. You are lucky to be able to keep switching back and forth if you get the same effect each time **although not lucky to suffer from this horrible, horrible disorder.**

<http://www.dr-bob.org/babble/20091206/msgs/928866.html>

Obviously she is **not “lucky” to go through a divorce.**

<http://www.jehovahs-witness.net/social/relationships/161027/1/How-do-you-start-over-again-when-marriage-ends>

Women with mixed or black skin are **not lucky to have to cheat with foundations to look good.**

<http://tipmakeup.com/category/cheeks-makeup/>

I was a bit lucky too, as I was able to use fresh pecans...**not lucky to have to shell them** though.

<http://www.taste.com.au/recipes/10206/oat+and+pecan+biscuits>

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You are not lucky if you **suffer from a horrible disorder**, if you **go through a divorce**, if you **have to cheat to look good**, or if you **have to shell pecans**. These examples are meant to have the factive interpretation: the infinitival clause is presented as true.

Consonant and Implicative

You can have one spore in a container but the lab only analyzes 10 grams. If you're **not lucky to get that spore in that 10 grams**, it's going to show up that it's clean.

<http://www.jsonline.com/watchdog/pi/fda-investigating-89-complaints-of-illness-from-recalled-chobani-yogurt-b9994345z1-223048591.html>

I was **not lucky to be born in a hospital like other people were**, but under a tree behind my grandparents' small cottage.

<http://www.radiobridge.net/cambodia/Cambodia%20Radio/cambodia%20radio/radio29.html>

Not all seeds will be lucky to sprout and grow, so each budding seed is the symbol of hope and happiness.

<http://www.red-dot-21.com/products/lucky-7>

The other thing that parents with only one child are **not lucky to experience is disagreements, arguing and conflicts between brothers and sisters**.

<http://books.google.com/books?isbn=158741001X>

IRONY

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You may not have noticed it but all the examples I showed you in the earlier slides with the implicative interpretation had a consonant relation between *lucky* and the infinitival clause. Here are a few more example to drive home that point.

One contaminated spore in a container of yogurt will spoil it in a matter of days but if you are testing just 10 grams of a container, you would be lucky to catch it. If you are not lucky, you won't. The same for being born in a hospital or being a seed that sprouts and grows. If you are not lucky you don't.

The last example shows how this convention is exploited for irony. When you are ironical, you say the opposite of what you really mean. Of course one is not lucky to experience disagreements, arguing and conflicts but an ironical statement flips this around to a consonant relation yielding an implicative reading of what would otherwise be a factive interpretation of **not lucky to experience disagreements, arguing and conflicts between brothers and sisters**. If you change the example to **I was not lucky to experience disagreements, arguing and conflicts between brothers and sisters**, the factive interpretation becomes the preferred one. Arguing and conflicts between brothers and sisters is something that parents with only one child will never experience.

What is going on: Three hypotheses

- A. All evaluative adjectives including *lucky* are actually FACTIVE for everybody but the pressure to interpret the discourse as coherent leads some speakers to assume a spurious *enough* in *NP is not Adj to VP* in consonant examples resulting in an implicative interpretation.
- B. All evaluative adjectives are actually IMPLICATIVE for everybody. The factive effect in dissonant cases comes about because the pressure to interpret the discourse as coherent leads speakers to assume that the negation in *NP is not Adj to VP* is metalinguistic.
- C. We have a mixed population of factive and implicative speakers. Each group is aware of the other and adapts its judgements towards coherence in consonant and dissonant cases. Neutral examples should give us an estimate of the sizes of both groups.

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Here are three hypotheses about what might explain the different judgements. The A hypothesis incorporates the idea of a “noisy channel”. People make errors when they produce and interpret sentences. The person who says *I wasn't lucky to get a table* meaning that she did not get a table should have said *I wasn't lucky enough to get a table*. Hearing *I wasn't lucky to get a table* you might hear an *enough* that isn't actually there.

Being an solid implicative speaker myself, I once believed in the B hypothesis, at least as far as *lucky* was concerned. But in the light the data that you have now seen, both A and B look rather implausible now.

The C hypothesis is viable. Having discovered the consonant/dissonant effect in our first Turker experiment, it became clear that we should also have examples that are neither consonant nor dissonant but neutral. In addition to sentences like *Robin was not clever to choose the best piece* or *the worst piece* we also should test sentences like *Robin was not clever to choose the middle piece*. When we ask our subjects *Did Robin choose the middle piece?*, speakers of a factive dialect should say *Yes* and implicative speakers should say *No* without being pushed either way by harmonicity.

Two conjectures shared by the three hypotheses

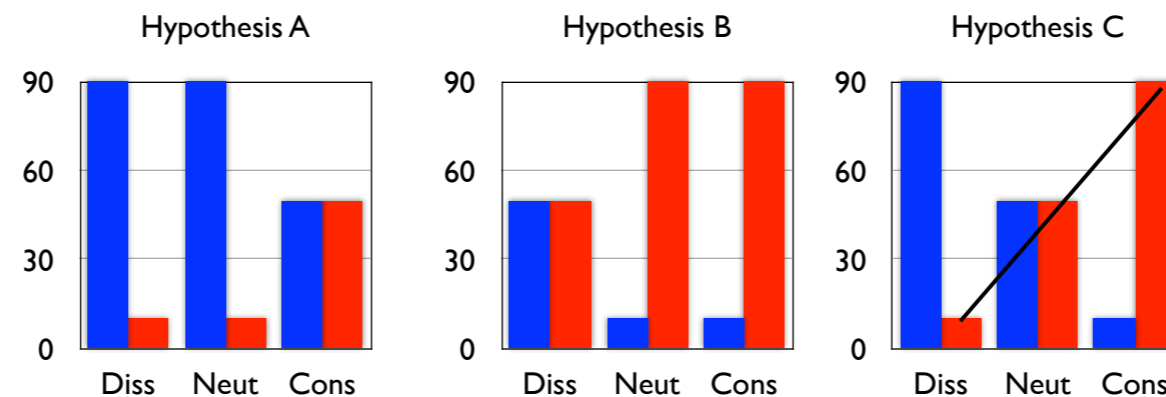
- Lexical Semantics

Evaluative adjectives are inherently factive or implicative, may depend on the particular adjective, some might be ambiguous.

- Discourse coherence

Consonant/Dissonant effect sometimes overrides the lexical semantic categorization.

Predictions



NP was not Adj to VP.

Did NP VP?

YES NO

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In the experiment we present to the subjects sentences of the form *NP was not Adj to VP* where the relation between the evaluative adjective and the VP is one of three types, DISSONANT, NEUTRAL, and CONSONANT. We then ask the question *Did NP VP?* and record the number of YES and NO answers.

If all the adjectives are factive (Hypothesis A) we should get mostly YES answers in the dissonant and neutral cases because the pressure to coherence comes to play only in the consonant cases, e.g. *Kim was not lucky to get the best piece*, where some of the subjects heard or thought that the speaker meant *lucky enough*.

If all the adjectives are implicative, we should get mostly NO answers in the neutral and consonant cases. Because of the pressure to coherence, in the dissonant case some of the subjects would take the negation as metalinguistic, that is, in fact the *NP VPed* but the adjective is not inappropriate, e.g. *Kim was not 'lucky' to get the worst piece, he was very unlucky*.

If there are actually two dialects involved, neutral examples such as *Kim was not lucky to get the middle piece* should show the proportion of the subjects in the factive and implicative dialects.

This graph makes the implausible assumption that the two camps are equally strong. The crucial prediction is that the number of NO answers should grow as we move from dissonant to consonant examples and the number of YES answer should go down.

Of course there will also be cases where the subjects cannot decide between YES and NO. They are not represented in these three graphs.

Experimental Setup

- Subjects

206 subjects ranging in age from 18 (1) to more than 60 (3), about half of them (108) between 19 and 30. 100 were women.

- Task

Each subject was asked to respond to 30 test sentences randomly chosen from sets such as

Sally was stupid to take the best piece. **DISSONANT**

The man wasn't stupid to take the best piece.

Harry was stupid to take the middle piece. **NEUTRAL**

Larry wasn't stupid to take the middle piece.

Paul was stupid to take the worst piece. **CONSONANT**

Sally wasn't stupid to take the worst piece.

On the average we recorded 34 responses for each test sentence. The reward for the experiment was \$1.

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Altogether we ran seven experiments on Amazon Mechanical Turk last Spring and Summer. Some of the early experiments focused on *lucky* and *unlucky*, *fortunate* and *unfortunate*. The later ones included 19 evaluative adjectives including *lucky* and *fortunate*. Here is the setup for one of the experiments.

The stimuli were arranged in blocks of six sentences. Each subject would get just one sentence, randomly selected, from each block. In this experiment we were only interested in the subject's responses to the negative stimuli but half of the sentences in each block were positive. Each set included one dissonant, one neutral, and one consonant pair. We knew the right answer for the positive sentences and used them as controls and distractors. There were also other types of distractor sentences with no adjectives such as *Mary pretended to have everything under control. Did Mary have everything under control?*

NP was not lucky to VP

Statement: Kim was not lucky to have a well-paying job.

Question: Does the author believe A or B?

A: Kim did have a well-paying job.

B: Kim did not have a well-paying job.

Choose one answer based only on the given sentence.

- A
- B
- Cannot decide

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If the subject clicked on the *Cannot decide* button, we asked a follow-up question...

Why “Cannot decide”?

Statement: Kim was not lucky to have a well-paying job.

Please explain. Why did you choose “Cannot Decide?”

- The statement makes no sense.
- The author could have meant either A or B.
- For some other reason. Please specify:

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Most common response was that the author could have meant either A or B.

Tabulating the results

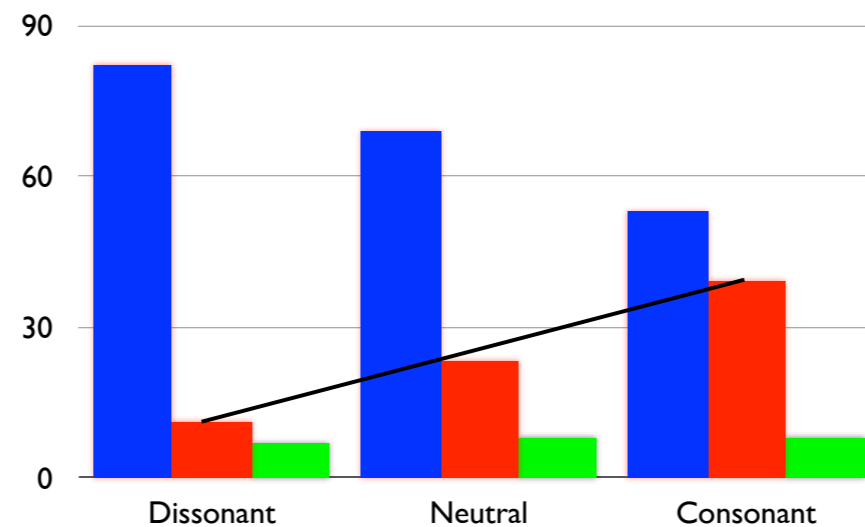
sentence	did have	didn't have	cannot decide	ambiguous	nonsense	total
Kim was lucky to have a well paying job.	100%	0%	0%	0	0	34
Kim was not lucky to have a well paying job.	17%	78%	6%	2	0	36
Kim was lucky to have a badly paid job.	91%	4%	6%	1	2	54
Kim was not lucky to have a badly paid job.	73%	16%	11%	3	1	37

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We had both affirmative and negative examples in equal numbers although we were actually interested in the negative cases. The affirmative answers do not distinguish presupposition from entailment.

Overall results



NP was not Adj to VP.

Did NP VP?

YES NO NEITHER

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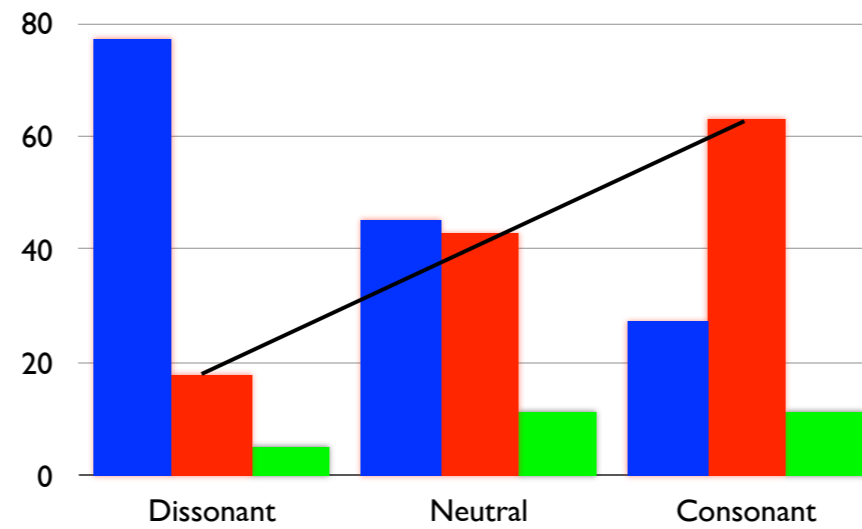
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This graph shows the combined results for all the 19 evaluative adjectives in our experiment. It is clear that the predictions of Hypothesis A (that all evaluative adjectives are factive) and Hypothesis B (that all evaluatives are implicative) are not confirmed. Hypothesis C (that there are two dialects) is consistent with these results but the proportions in the neutral case are not 50/50. There are three times as many subjects that give the factive YES answer in the neutral case than subjects that choose the implicative NO answer.

There are at least two reasons why the overall results are not as crisp as one might have expected. Some of the 19 adjectives such as *humble* might not belong to the group of evaluative adjectives that we wanted to test. Secondly, even if they all did, maybe the examples for some of them were not the best one could have chosen. Is *Kim was not humble to hide his awards* consonant or not? There may have been other flaws in the experimental setup. For example, we made up what for us seemed dissonant and consonant examples but our subjects in some cases did not agree. We had to *go to San Francisco* and *live in Europe* tagged as neutral but from the responses it is clear that the majority of our subjects would be lucky to go San Francisco (CONSONANT) and unlucky to live in Europe (DISSONANT). We thought that being born into a rich family would be lucky and being born into a poor family would not be lucky. For the Turkers didn't make a difference. Both were perceived as dissonant.

But for the adjectives we were mostly interested in such as *lucky*, the results are convincing anyway.

Results for *lucky*



NP was not lucky to VP.

Did NPVP?

YES NO NEITHER

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For *lucky* the outcome from the experiment is in close agreement with the what Hypothesis C predicted. In the neutral case there is almost an even split between factive and implicative responses.

Under the Neutral and Consonant conditions 11% of the Turkers clicked on the [Cannot decide](#) button.

Conclusion

- There are two *lucky* dialects. The speakers of the two dialects agree that *NP was lucky to VP* means that *NP VPed* but tend to differ on what *NP was not lucky to VP* means.
- For both dialects there is a strong CONSONANT/DISSONANT effect. If the *VP* clause is judged to be lucky for the protagonist (CONSONANT) most speakers take a negative statement to mean that the *VP* clause is false. If it would not be lucky (DISSONANT), most speakers infer that the *VP* clause is meant to be true.

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This conclusion may be too strong. Maybe “dialect” is a too loaded word to describe what we found. Another way of explaining the data would be to say that there are two established *conventions* on using evaluative adjectives like *lucky* that fluent speakers of English are aware of. Each of them may be biased towards the factive or towards the implicative usage. The consonance/dissonance effect seems to indicate that our subjects on some level are aware of the two conventions and interpret what they hear in a way that preserves harmonicity even if they themselves would not express the perceived meaning in that way.

It could be the same kind of situation that Labov describes in his classic 1972 article on “Negative Attraction and Negative Concord.” Speakers of Black English have no trouble interpreting sentences without NegConcord such as *None of us ever took an airplane and none of us took a bus, either*. But when asked to repeat what they heard they say *None of us never took a airplane and none of us took a bus, neither*.

Idiomatic *lucky*

- **Idiom:**

He will be lucky to get away with it. Even if he does, it is a formula for the Italianization of Spain.

<http://www.economist.com/node/14130653>

- **Not idiom:**

Half of you will be lucky to get away as winners while half of you will go home empty-handed.

<http://jimmakos.com/2013/08/make-money-fast-gambling/>

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Lucky and its sister adjective *fortunate* and their inverses *unlucky* and *unfortunate* are special in that they can have an idiomatic 'probably not' interpretation. To my knowledge this is a unique feature of English. If you need to translate the idiomatic sense to languages like French or German, you have to make an if-clause: *He will be lucky if he gets away with it.* I will show you some idiomatic examples from the web.

Idiomatic examples from the web

Without a track record they will be lucky to get anyone to listen to, much less steal, their ideas.

<http://makermatters.blogspot.com>

Scientists claim that we will be lucky to have 50 more years before turtles and tortoises are extinct.

<http://www.tortoiseforum.org/threads/things-to-consider-before-adopting-a-tortoise-or-turtle.37/>

You will be quite lucky to find a place that allows ONE dog, let alone two.

<https://answers.yahoo.com/question/index?qid=20110428090255AAIB9Cz>

They will be lucky not to get the wooden spoon.

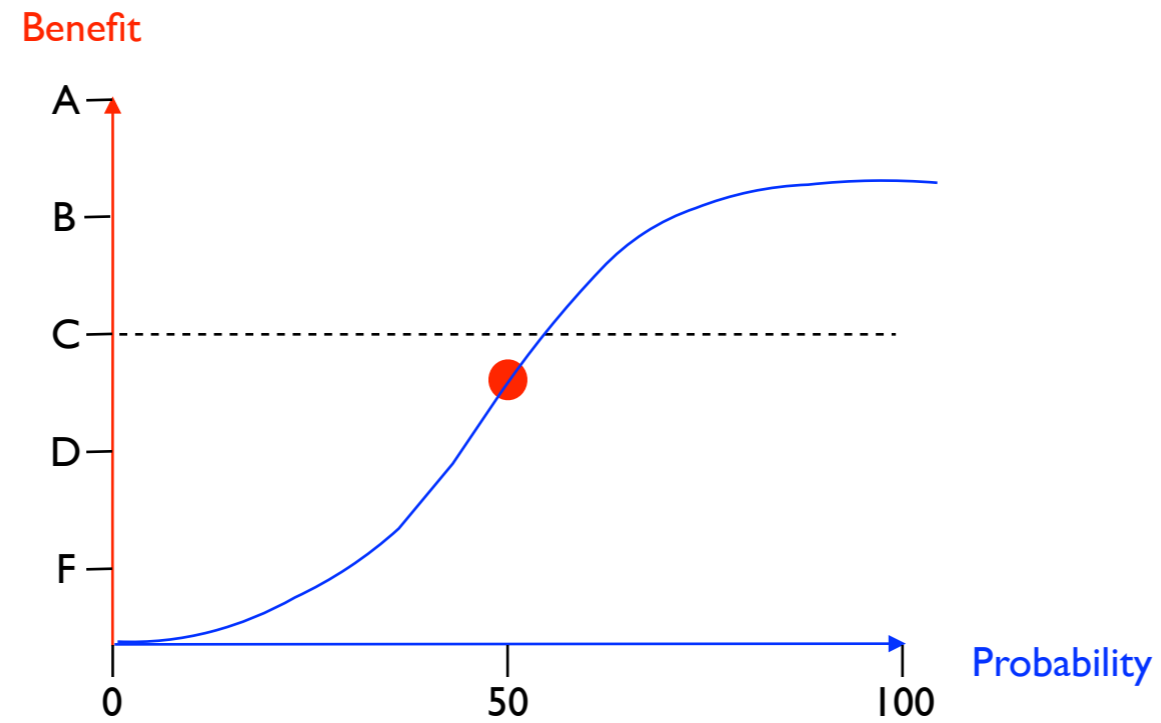
<http://www.questionhub.com/YahooAnswers/20080725215638AA7A997>

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An actual wooden spoon was awarded as a mock prize for the worst performer in a debating society at the University of Cambridge. It now means being the last in any sports competition.

You will be lucky to get a C

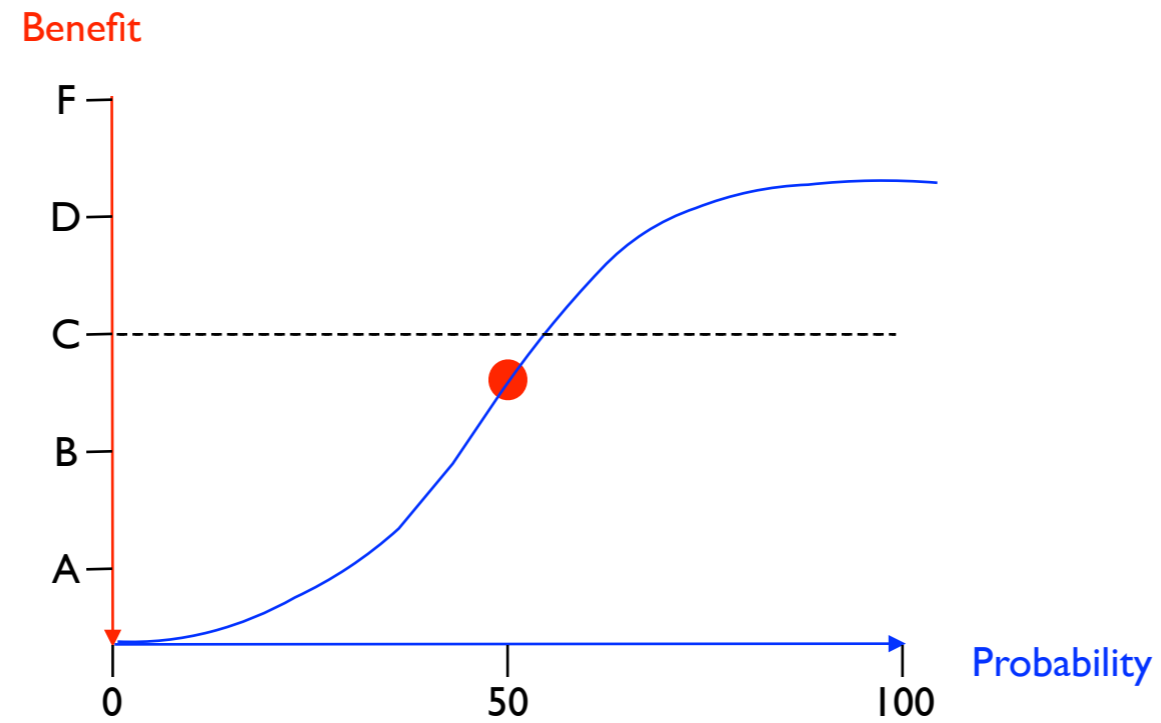


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Being lucky is a function of probability and benefit. Here the X axis is associated with the cumulative distribution function for getting a grade between F and A. The peak of this Gaussian distribution is at C—. The Y axis is the measure of benefit to you. The blue sigmoid curve tells us that this is a hard course. There are very few As. Most students like you will not even get a C.

You will be unlucky to get a C



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Unlucky is the inverse of *lucky*. The probability distribution does not have to change but the benefit scale is reversed. If you get a C most of your class mates will get a C+ or a better grade. This is an easy course, the majority of the class will get As or Bs.

In both cases, *You will be (un)lucky to get a C* says that most likely you will not get a C. *Lucky* entails that you will do worse, *unlucky* says that you will do better.

Necessary structural conditions for the idiomatic reading

- Future tense, future in the past, or generic

You will be lucky to break even.

We were going to be lucky to make it home before dark.

Just a hundred years ago a man was lucky to live to be 40.

- Declarative

Will she be lucky to survive?

No idiomatic reading, a genuine question.

- Affirmative

She will not be lucky to survive.

No idiomatic reading, she will not survive.

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The future tense does not have to be expressed by *will*. *You are going to be lucky to break even* also has the idiomatic sense.

With *were going to be* we also get a future orientation in the past that enables the idiomatic reading.

A (generic) man is goes with the idiomatic reading *a (specific) man* would go better with the literal sense.

All the sentences of the type *Will she be lucky to survive?* that I have seen seem to be asking literally *Is she going to survive?* rather than the idiomatic question *Is it likely that she won't survive?* (I am not sure about this.)

The overt negative only goes with one or the other of the literal readings. In this case it is implicative because surviving would be good (CONSONANT) for the protagonist, hence the negative implication.

Biases

- Negative polarity item in the VP forces the idiomatic reading
I will be lucky to get any sleep this weekend.
Motorola will be lucky to get another dime from me ever again.
- Existential adverb favors the literal reading
You will be lucky to find an editor who can also typeset your completed book.
You will sometimes be lucky to find an editor who can also typeset your completed book.
- Minimal vs. substantial benefit
When staying in a hotel room you will often be lucky to have some sort of balcony, let alone a view.
If you are there during the summer months, you will often be lucky to enjoy some great live music in the band shell they have on the site!

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I think nobody has identified the *will be lucky to VP* construction as a trigger for negative polarity items but it is in the idiomatic sense. This is a symbiotic relationship. Neither one would be possible without the other.

The latter example with *sometimes* is the one I found on the web. I noticed that leaving out *sometimes* does away with the literal interpretation that the original example was meant as.

If you just read *to have some sort of balcony* you may not be able to conclude whether the author regards that as a minimal or as a substantial benefit but, when she continues *let alone a view*, you figure out that a balcony is a minimal benefit, and that trips the interpretation from the literal to the idiomatic 'probably not' reading.

It is obviously a substantial benefit *to enjoy some great music*. Therefore, this example is meant to be literal: you will often enjoy some great music when you stay at that hotel.

Given the same probability, *often*, less benefit favors the 'probably not' reading over the literal one. The beneficial *to enjoy great live music* trumps over the pessimistic alternative. Even more so in cases like this ...

A message of hope



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Because of the disjunction *is or will be* this poster can only convey the literal meaning of *someone will be lucky to have you*. It carries a powerful positive message. If someone is lucky to have you, then you are a worthy person, no matter how depressed you are or how bad you feel about yourself. This is the message some good Samaritan is trying to pass on to you.

A promise



My future boyfriend will be so lucky to have me cooking yummy food like this every day ;)

<http://twitpic.com/photos/Haleysadler>

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The 'probably not' reading is impossible here. There is the picture itself of what the future boyfriend can expect every day and other subtle signals that make this a promise. There will be great benefits and the boyfriend will be sure to get them. But we can peel off the good promising signals one by one, starting with the picture ...

Variations

My future boyfriend will be **so** lucky to have me cooking yummy food like this for him every day.

My future boyfriend will be lucky to have me cooking yummy food **like this** for him every day.

My future boyfriend will be lucky to have me cooking **yummy food** for him every day.

My future boyfriend will be lucky to have me cooking for him **every day**.

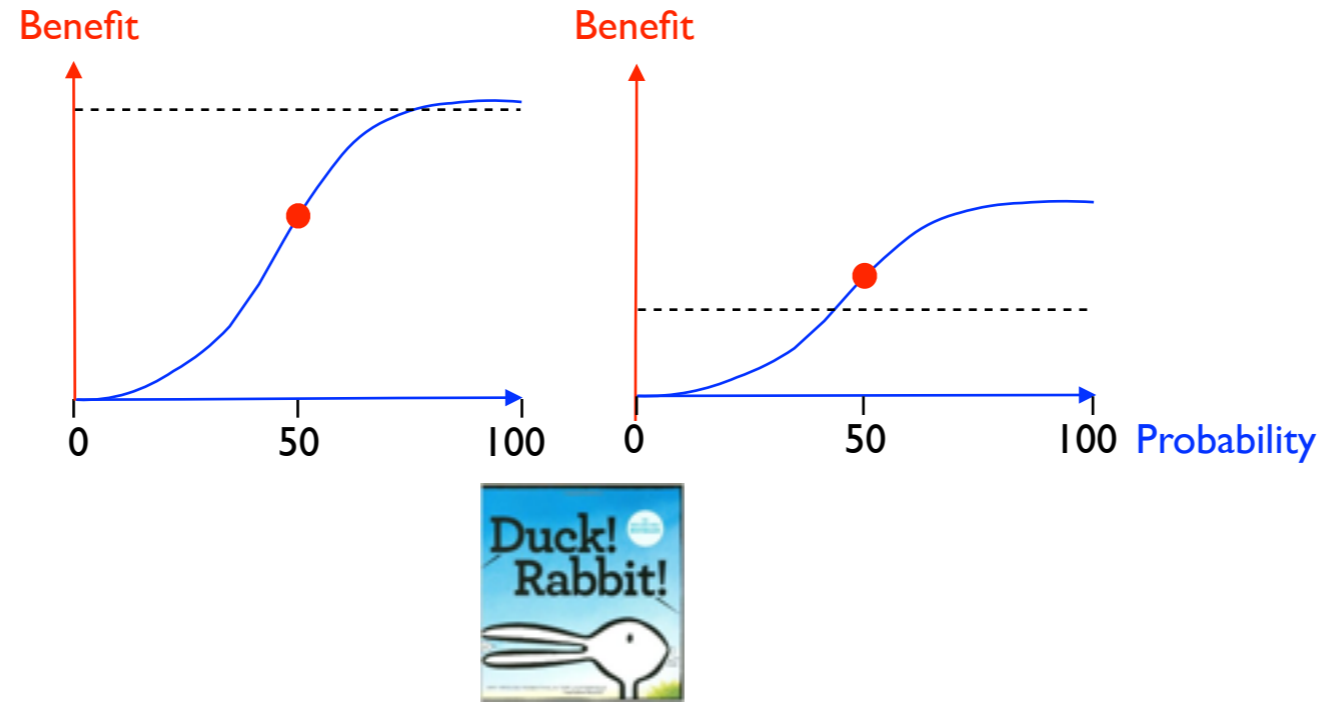
My future boyfriend will be lucky to have me cooking for him.
(Probably not)

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If we leave out the picture and drop the positive signals, we can carve out the idiomatic 'probably not' sense that is hiding there in the stripped-down structure.

From maximal to minimal benefit
≈ from nearly certain to very unlikely



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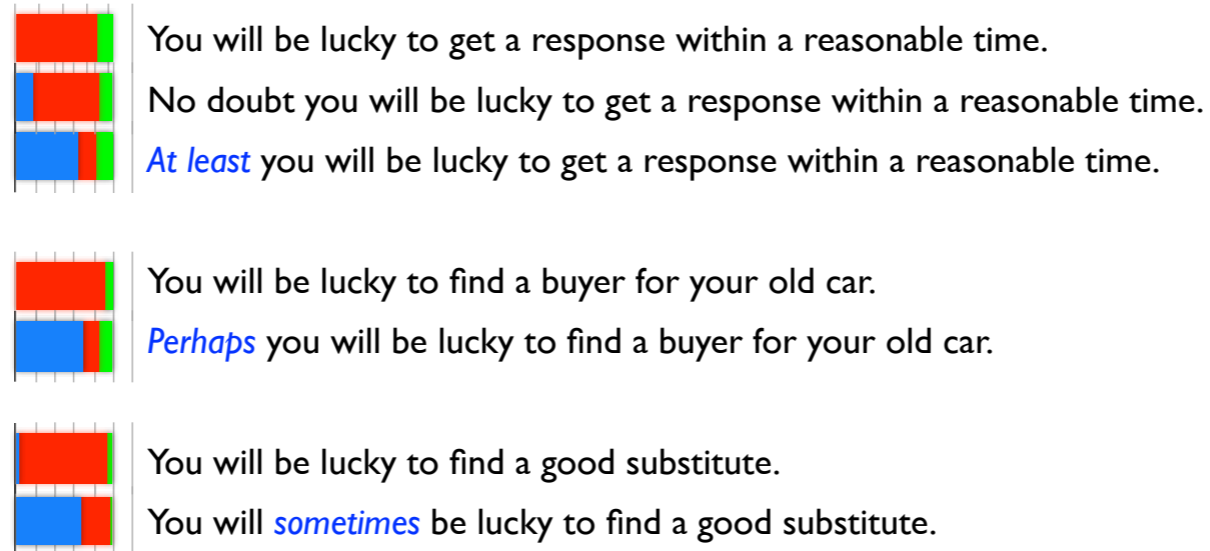
What I did on the previous slide was to gradually move from the scenario on the left to the scenario on the right. We think that the expected benefit for the protagonist and the likelihood of it coming about are linked. As the benefit is reduced the perceived likelihood of it happening diminishes along with it. At some point it dips below 50%.

This explanation is mainly due to Tania Rojas-Esponda, Cleo Condoravdi and Stanley Peters. Stanley presented it in our talk "Double Meaning" at the International Congress of Linguists in Geneva last summer.

The change is not gradual. It is an instant categorical change of perception. You see either a duck or a rabbit, either the original regular interpretation or the idiomatic reading.

Positive valence shifters

YES PROBABLY NOT NEITHER



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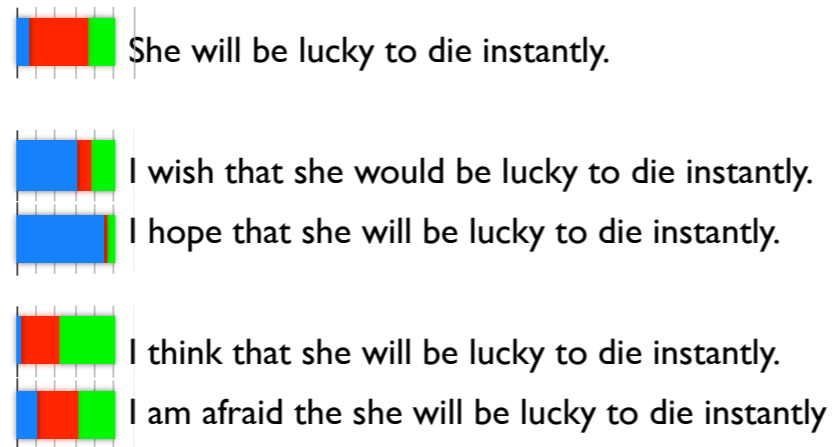
Sentences that would otherwise be understood in the idiomatic ‘probably not’ sense can be flipped to the regular positive interpretation by modifiers such as *at least*, *perhaps*, or *sometimes*. The colors in the bars indicate the responses of the Turkers. None of our subjects thought that *You will be lucky to get a response within a reasonable time* means that you will get a response within a reasonable time. But if you prefix *at least* to the beginning, more than 60% of the subjects interpret it positively.

These examples pose a challenge to compositional semantics. Why is *You will be lucky to get a response within a reasonable time* understood in the idiomatic ‘probably not’ sense? It is because it implies not a positive response or a negative response but a minimal benefit of any response at all within a reasonable time. Describing a minimal benefit as *lucky* suggests that you might not get even that.

Affixing *at least* to the beginning of the pessimistic statement flips from the idiomatic interpretation to the regular one. Why is that? It is because *at least* is a response to a pessimistic expectation: you will get a negative response. It picks out something positive from a bad situation: the response won’t be what you hoped for but at least you will not have to wait for it. That’s the good part. The dark cloud over you has a silver lining.

Examples of this type seem to be out of scope of standard compositional semantics. We don’t have the tools to deal with them.

Propositional attitudes



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To assign a meaning to something like *She will be lucky to die instantly* you have to imagine a situation where someone will die, an accident or an execution and come up more lucky or less lucky alternatives. The majority of the responses to *She will be lucky to die instantly* assumed a scenario where dying instantly would be good but not likely to happen to the protagonist. But if the speaker indicates what outcome she would prefer, we get the regular positive prediction for the *VP* clause.

Here again the blue responses are for *(I Verb that) she will die instantly*, the red is for *(I Verb that) she is unlikely to die instantly*, and the green for *Cannot decide*. Clearly, *wish* and *hope* are incompatible with the idiomatic 'probably not' reading. The Turkers were confused about *think* and *be afraid*, the *Cannot decide* clicks were unusually numerous. More than 50% indicated that they could not decide on what the speaker of *I think that she will be lucky to die instantly* meant.

How do we deal with the fact that the proposition expressed by *she will be lucky to die instantly* depends on the matrix verb it combines with? Our toolbox for compositional semantics does not have a wrench for that kind of twist.

Summary

- *NP was not lucky to VP* - can be understood in two ways:

Factive: *NP VPed* (but *NP* was not lucky)

Implicative: *NP did not VP* (*NP* would have been lucky if he had *VPed*)

There are two dialects, the judgements of whether *NP VPed* are affected by the consonant/dissonant effect for *NP was not lucky to VP* for both dialects.

- *NP will be lucky to VP* - has a pessimistic idiomatic interpretation:

Idiom: *Most likely NP will not VP*

Not Idiom: *NP will VP*

The choice between the idiomatic and literal meaning is categorical and depends of how beneficial the *VP* clause would be for the *NP* and other factors that we don't fully understand yet.

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This is the summary of my talk in a nutshell. I think that the factive reading of *I was not lucky to get a table* involves a presupposition in the Frege-Strawson sense and that the implicative reading goes with a Fregean suggestion which I take to be the same as Grice's conventional implicature.

The obstacle that the author of the implicative *I was not lucky to get a table* was not able to overcome was the odds against a lucky outcome, hence the negative entailment.

Recommendations

- It has been a common practice to make conjectures about what S means or cannot mean without checking the judgements of the speech community at large.
- Out of respect for the authority, students suspend their own intuitions. Elaborate theories, dissertations, careers get built on questionable data. Not uncommon in syntax but semantics is not free of that sort of pollution.
- Don't trust you own judgements, or those of your authorities, colleagues, or students without canvassing the corpora, the abundant data on the web, and naive native speakers.
- Do experiments, do modeling.

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In the early days in the 1970s, semanticists like myself thought of semantic categories like part-of-speech labels. You come up with a term like FACTIVE, SEMI-FACTIVE, IMPLICATIVE, etc. and attach them to particular lexical items and constructions. That was so short-sighted.

I was distressed to discover that the first unsubstantiated designation of *lucky* as a factive adjective is in my 1971 paper on "Implicative Verbs". This classification has been in circulation for ever since, the most recent articles I have seen that repeat it are from 2009 and 2010. As far as I know, no one ever bothered to ask whether the negative sentences with *lucky* support the factivity thesis. The idiomatic 'probably not' sense of *lucky* is mentioned in textbooks for English learners but not in the semantic literature.

About elaborate over-theorizing over faulty or questionable data, in syntax the *Weak Crossover* effect is an example; in semantics the *Hurford Constraint* is another phantom generalization.

There is a garbage heap of corrupt data on the web but there is also lots of bogus examples in semantic articles by reputable people. Be suspicious. For many interesting phenomena, such as *lucky*, the curated corpora, the BNC and COCA are much too small. You don't learn anything useful about *lucky* from these collections.

Do experiments even if the data turns out to be more complex than your current theory can accommodate.

At least you will be lucky not to find out 40+ years later that you were so uninformed and naive as I once was.

The Chameleon-like Nature of Evaluative Adjectives

Lauri Karttunen
Stanley Peters
Annie Zaenen
Cleo Condoravdi



Empirical Issues in Syntax and Semantics 10,
Christopher Piñón (ed.)

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Acknowledgements

Thanks to our 2013 Summer interns!

Kenny Moran, Stuart Mellon, Dasha Popova

Thanks to DARPA, our ex-sponsor!

The authors gratefully acknowledge the support of Defense Advanced Research Projects Agency (DARPA) Machine Reading Program under Air Force Research Laboratory (AFRL) prime contract no. FA8750-09-C-0181. Any opinions, findings, and conclusions or recommendations expressed in this material are those of the authors and do not necessarily reflect the view of DARPA, AFRL, or the US government.

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We are legally required to gratefully acknowledge our DARPA support in these exact words.