What inferential conditionals can reveal about epistemic modals.
An experimental study of evidentiality.

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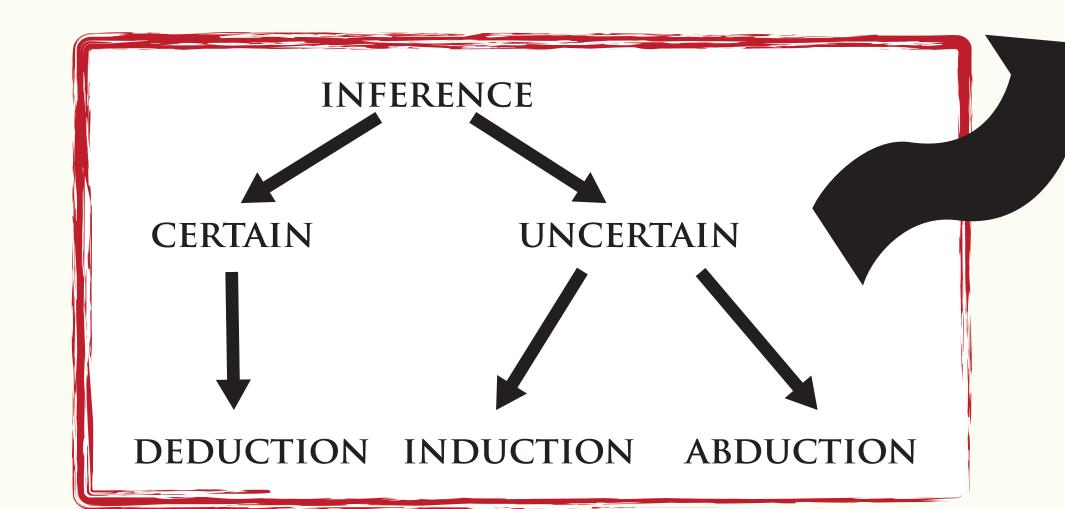*University of Groningen*
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INFERENTIAL CONDITIONALS

INFERENCE → CERTAIN / UNCERTAIN
CERTAIN → DEDUCTION
UNCERTAIN → INDUCTION, ABDUCTION

A sentence "If p, then q" is a deductive inferential (DI, for short) / inductive inferential (II) / abductive inferential (AI) conditional iff q is a deductive / inductive / abductive consequence of p.

A sentence "If p, then q" is a contextual DI / II / AI conditional iff q is a deductive / inductive / abductive consequence of $\{p, p1, \ldots, pn\}$, with $p1, \ldots, pn$ being background premises salient in the context in which "If p, then q" is asserted or being evaluated.

Igor Douven and Sara Verbrugge (2010), The Adams family. Cognition 117, 302–318.

METHOD

- three versions of the survey: English (N = 95), Dutch (N = 47) and Polish (N = 42).
- all participants were native speakers.
- the type of conditional (DI / II / AI) as well as lexical markers were manipulated within subjects.
- each participant were presented with 15 contexts: 5 involved deductive inference, 5 involved inductive inference, and 5 involved abductive inference.
- each context was followed by 3 conditional sentences: one without any marker, one with "should" / "powinien" / "zal wel", and one with "must" / "musi" / "moet wel".
- 7-point scale of assertability.

EVIDENTIALITY

The source or quality of information on which an assertion is made can be encoded in language either grammarically or by means of lexical markers.

ACCESS → DIRECT / INDIRECT
DIRECT → PERCEPTION
INDIRECT → HEARSAY, INFERENCE

Thomas Willett (1988), A cross-linguistic survey of the grammaticization of evidentiality. *Studies in Language* 12(1), 51–97.

EXAMPLE STIMULI

Context: Bernard is a bit of an irregular student: sometimes he works hard, but he can also be lazy. So far he had excellent grades for most courses for which he had worked hard.

How assertable are the following conditionals given this context?

If Bernard works hard for the linguistics course, then he will get an excellent grade for it.
If Bernard works hard for the linguistics course, then he should get an excellent grade for it.
If Bernard works hard for the linguistics course, then he must get an excellent grade for it.

Context: Nelly lives on the sixth floor of an apartment building. The elevator has been broken since earlier this morning. A good friend of Nelly's who lives on the third floor of the same building hears someone rushing down the stairs. She knows that Nelly tends to avoid exercise as much as possible.

How assertable are the following conditionals given this context?

If that's Nelly rushing down the stairs, then she is in a hurry.
If that's Nelly rushing down the stairs, then she should be in a hurry.
If that's Nelly rushing down the stairs, then she must be in a hurry.

RESULTS

1. English "must", Polish "musi" and Dutch "moet wel" are evidential markers of abductive inference which is indirect and defeasible source of information.
2. English "should" is an evidential marker of inductive inference.
3. Dutch "zal wel" can be seen as an evidential marker of uncertain (both inductive and abductive) inference.
4. The status of Polish "powinien" is unclear.

CONCLUDING REMARKS

1. Whether the evidential signal conveyd by epistemic modals is part of their truth conditions, a presupposition or an implicature remains an open question.
2. It seems that Polish native speakers interpret "powinien" normatively (as an expression of duty or obligation) much more often than the speakers of English or Dutch.
3. All markers have negative effect on the assertability of DI conditionals. It is possible that certain inferences are percieved as sort of a direct evidence.
4. The typology of conditionals proposed by Douven and Verbrugge (2010) proved to be of theoretical significance.

THE QUESTIONS

Are epistemic modal verb "should" and "must" evidential markers indicating that the evidence is indirect and that the content of the assertion has been inferred?
If so, do they mark **any** inference? Or do they indicate specific **types** of inferences?

1. (a) Susan studied philosophy. She **should** know who Hegel was.
   (b) ?? Susan just published a book on Hegel. She **should** know who Hegel was.

2. (a) I heard that Jim got a post-doc position. He **must** have already defended his PhD.
   (b) ?? I attended Jim's public PhD defence last month. He **must** have already defended his PhD.

3. (a) The key is either in my pocket or in the bag. It is not in my pocket, so it **must** be in the bag.
   (b) ?? I see that the key is in the bag, so it **must** be in the bag.

How does adding "should" or "must" to an **inferential conditional**'s consequent affect its assertability?

Do Dutch and Polish equivalents of English "must" and "should" follow the same pattern?

Kai von Fintel and Anthony Gillies (2007), An Opinionated Guide to Epistemic Modality. *Oxford Studies in Epistemology* 2, 32-63.

RELATIVE ASSERTABILITY = assertability with a marker **minus** assertability without a marker

English — Relative assertability (-6 – +6); DI (red), II (black), AI (blue); categories: no marker, should, must

Dutch — Relative assertability (-6 – +6); DI, II, AI; categories: no marker, zal wel (should), moet wel (must)

Polish — Relative assertability (-6 – +6); DI, II, AI; categories: no marker, powinien (should), musi (must)