Clouds of uncertainty and presupposition projection
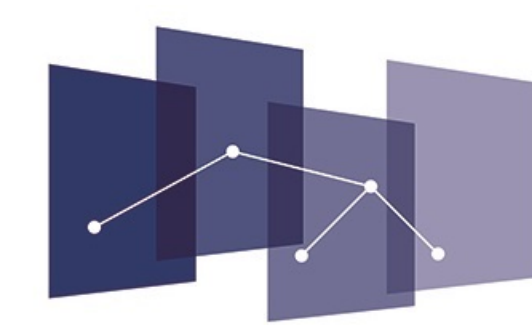
Form-meaning mismatches

RTG 2636

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Introduction and Key Points
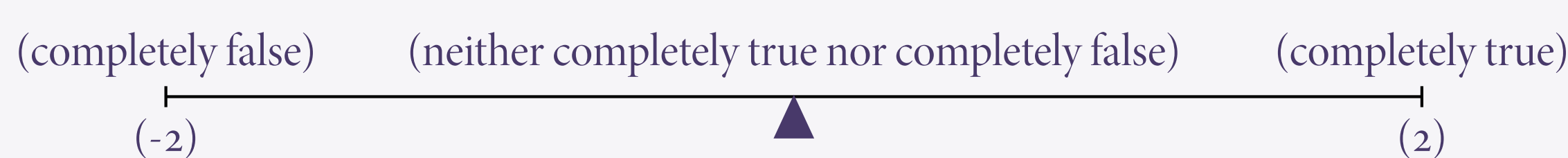
> Presupposition projection out of quantified expressions has been problematic in terms of judgments: Heim (1983) assumes that presuppositions always project universally, but Chierchia (1995) and Chemla (2009) a.o. suggest that a more nuanced view is required.

> Fox (2013) (building on George 2010) maintains that a trivalent system based on a Strong Kleene logic, (2) and (3), makes correct predictions for presupposition projection out of quantifiers.

> We test presupposition triggers that occur in the scope of the attitude predicate *be certain*, considering the possibility that it is a universal quantifier over possible worlds: it is not a neg-raiser and it triggers an indirect scalar implicature under negation, (1).

> A quantificational approach predicts that *be certain* patterns with a generalized quantifier like *everyone*, (4); instead, other approaches (such as the dynamic framework in Heim 1992; see also Beaver 2001) often assume universal projection for attitude predicates.

(1) Abigail isn't certain that Taro submitted late.
   ↝̸ Abigail is certain that Taro didn't submit late.
   ↝ Abigail considers it possible that Taro submitted late.

(2) Strong Kleene truth tables:

∧	T	F	#		∨	T	F	#
T	T	F	#		T	T	T	T
F	F	F	F		F	T	F	#
#	#	F	#		#	T	#	#

(3) **Projection out of a universal quantifier:**
The truth value of a formula $\forall x \in D\ [\phi(x)]$ is
  - T if $\phi(x) = $ T for all $x \in D$ (universal definedness projection for ϕ);
  - F if there is an $x \in D$ such that $\phi(x) = $ F (existential definedness projection for ϕ);
  - # otherwise (if there is an $x \in D$ such that $\phi(x) = $ # and no $x \in D$ such that $\phi(x) = $ F).

(4) Taro is certain that Aditi stopped drinking wine.
  - T if Taro is certain that Aditi used to drink wine and stopped.
  - F if Taro considers it possible that Aditi used to drink wine and didn't stop.
  - # if Taro is either certain that Aditi didn't use to drink wine, or if he is not certain whether she used to drink wine, he is certain that if she used to, she has stopped now.

The Experiment

This experiment aims at testing whether the participants' intuitions match the prediction of the Strong-Kleene-based system or rather a Heimian system for attitude predicates embedding a presupposition trigger where anything but universal satisfaction of the presupposition leads to presupposition failure (modulo local accommodation, cf. Heim 1983, Beaver & Krahmer 2001).

> Continuous trivalent truth-value judgment task   (cf. Križ & Chemla 2015)
> 2 × 4 design   (within-within; 48 items and participants)
>   1. NEGATION: without vs. with matrix negation
>   2. SCENARIO: true vs. false vs. undefined vs. critical
> The manipulation of the SCENARIO factor was encoded with a visual and a verbal component.
> Presupposition TRIGGER as a pseudo-factor: *stop* vs. *again* (between items, 24 each)

(completely false)   (neither completely true nor completely false)   (completely true)
(-2)   ▲   (2)

Materials (translated from German)

(5) NEGATION: without   TRIGGER: *stop*
  a. SCENARIO: true
     Markus: «I'm certain that Sonja drank wine in the past, and I'm certain that Sonja doesn't drink wine now.»
     Markus is certain that Sonja stopped drinking wine.
  b. SCENARIO: false
     Markus: «I'm certain that Sonja drank wine in the past, but I have no idea if now, Sonja drinks wine or not.»
     Markus is certain that Sonja stopped drinking wine.
  c. SCENARIO: undefined
     Markus: «I have no idea if in the past, Sonja drank wine or not, but I am certain that Sonja doesn't drink wine now.»
     Markus is certain that Sonja stopped drinking wine.
  d. SCENARIO: critical
     Markus: «I have no idea if in the past, Sonja drank wine or not, and I have no idea if now, Sonja drinks wine or not.»
     Markus is certain that Sonja stopped drinking wine.

(6) NEGATION: with   TRIGGER: *again*   SCENARIO: false
   Marie: «I'm certain that Jan canoed last time, but I have no idea if this time, Jan canoed or not.»
   Marie is not certain that Jan canoed again.

Hypothesis
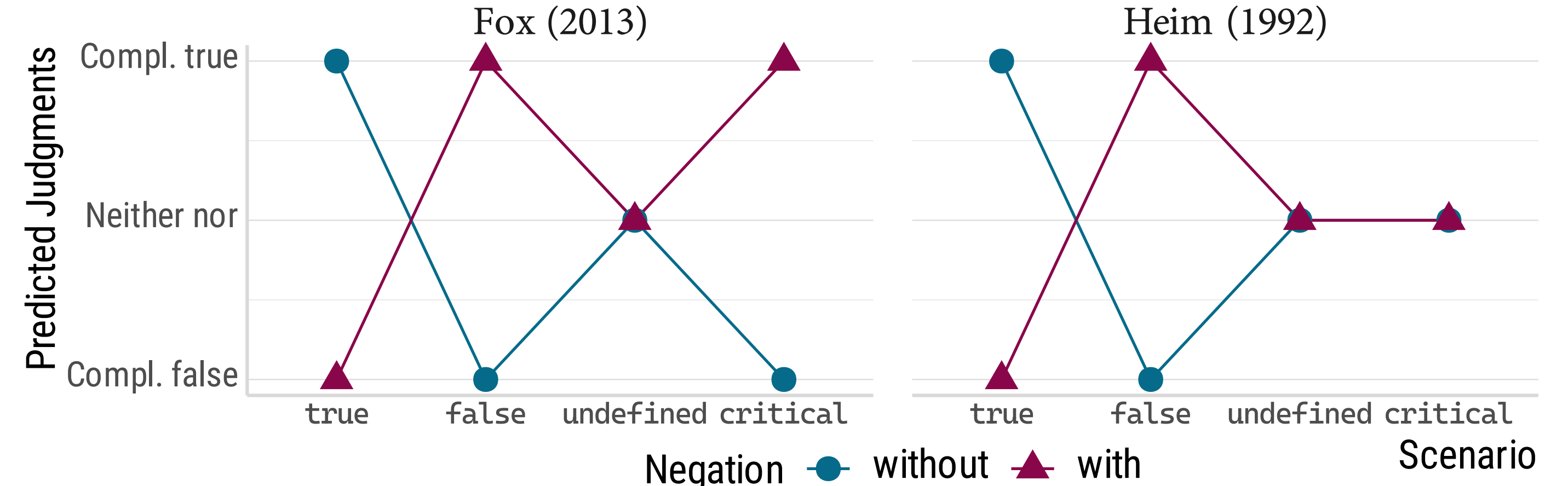
(Partial) Results (N = 22) The shaded areas indicate the raw distributions of the displayed measures.
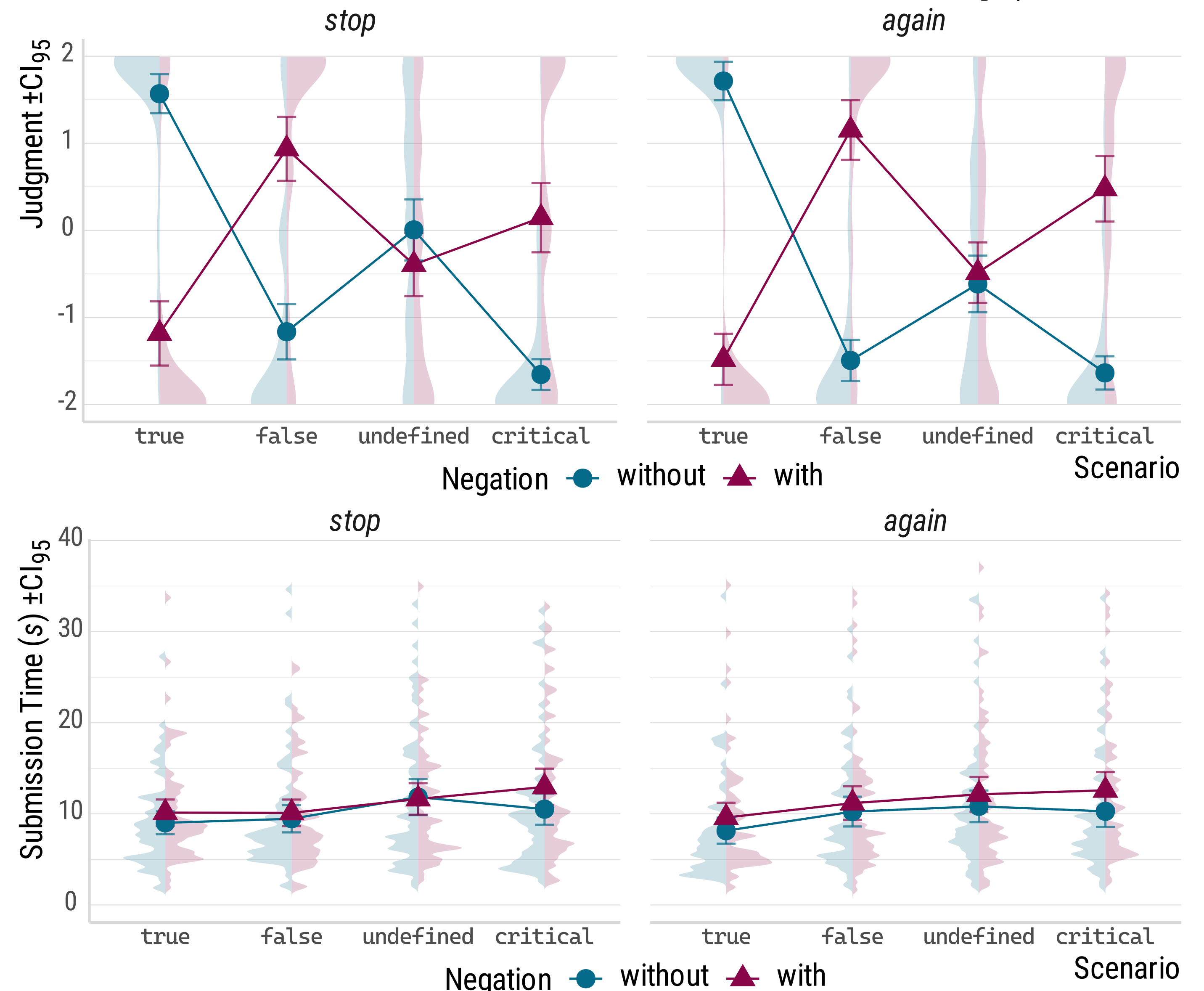
Conclusions and Next Steps

> Our (preliminary) experimental results are better captured by a system where presuppositions project out of *be certain* as third values out of universal quantifiers in a Strong Kleene logic:
  > In the undefined scenario, the target sentences receive intermediate judgments for both factor levels of NEGATION;
  > Instead, in the critical scenario, NEGATION affects the judgment: without negation, sentences are judged as false; with negation, they receive a higher truth value;
  > The critical scenario patterns more like false than undefined, thus giving support to the prediction of Strong Kleene; instead, generalized universal projection does not explain the contrast between undefined and critical;
  > Modals like *be certain* can be treated as quantifiers over possible worlds that behave like quantifiers over entities (cfr. Fox 2013) also in terms of presupposition projection.

> We plan on exploring related research questions using a similar methodology:
  > Can the presupposition projection pattern predicted by Fox (2013) be observed with the same design for quantifiers over entities? (true scenario not shown below)

   (7) All the men stopped drinking wine.

   false   undefined   critical
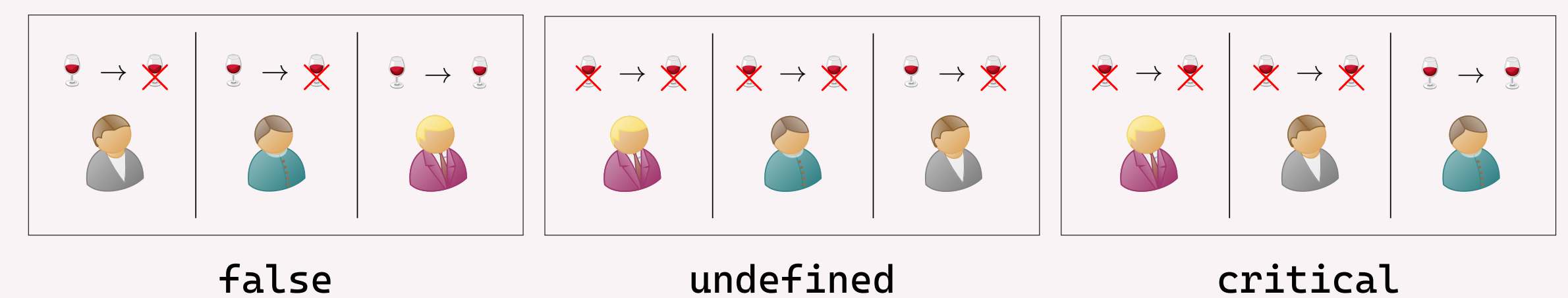
  > Does anaphora under *be certain* behave the same as presuppositions (Rothschild 2017)?

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(5a): *stop*, true   (5b): *stop*, false   (5c): *stop*, undefined   (5d): *stop*, critical   (6): *again*, false