
Turning noise into signal: Detecting presupposition failure through variability in truth-value judgments

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We introduce a distributional modeling approach to detect intuitions of presupposition failure, revealing that variability in judgments can be as informative as truth-value judgments themselves. Many utterances carry presuppositions that need to be fulfilled for truth evaluation to succeed; when they are not, presupposition failure may render the utterance undefined and the embedding discourse defective.

Here, we investigate so-called squeamishness, the claim in Strawson (1964) that interlocutors experience hesitancy and uncertainty in the face of presupposition failure. We hypothesized that squeamishness should be detectable experimentally by comparing the standard deviations in conditions exhibiting presupposition failure with those in classically true or false conditions. That is, when a participant is faced with an item whose presuppositions are not met, their experimental judgments should show more variability than when no presupposition failure obtains. We conducted two experiments using truth-value judgments on a quasi-continuous slider labeled only at the end- (“completely false,” “completely true”) and mid-points (“neither nor”). While both studies shared this method and manipulated truth-value intuitions using visual and verbal scenarios, they differed in theoretical scope and item design: one addressed presupposition projection from the attitude predicate *be certain*, the other the presuppositional requirements of singular (existence, uniqueness) and plural definites (homogeneity):

- (1) a. Peter is (not) certain that Jan canoed again.
b. The triangle(s) is/are left of the square.

To test whether squeamishness affects participants’ response behavior, we analyzed the data with Bayesian distributional models, which allow for the by-condition estimation of several parameters—means alongside standard deviations in our case—, an innovation over the single-parameter, location-only limitation inherent to traditional models.

In both experiments, items in presupposition-failure causing scenarios showed inflated standard deviation estimates, supporting Strawsonian squeamishness as a sign of presupposition failure. By contrast, true and false scenarios showed lower standard deviations. Going beyond semantics, this shows that variance itself can serve as evidence, rather than being treated as mere noise, provided the adoption of distributional models. Adopting distributional models also takes into account variance homogeneity, which negatively affects inference reliability.