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Can a Bayes' Net approach capture intuitive use of sequential testimonies in a legal reasoning paradigm?

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Abstract: The studies apply a Bayesian source credibility model to a legal setting to test epistemic influence of witness testimonies. The model amalgamates perceived witness trustworthiness and access to accurate information as independent elements that describe and predict the impact of the testimony of that particular witness.

Across two studies, the model enjoys a good fit with observed posterior ratings of the likelihood of guilt (study 1: $R^2 = .867$, study 2: $R^2 = .701$). Study 1 ($n = 101$) employs different witness types and reports whilst study 2 ($n = 102$) employs different witness types, access to accurate information, and reports.

The studies suggest the applicability of a Bayesian source credibility model in a legal setting to account for the impact of different witness types. We show that participants are sensitive to the type of witness and that different witnesses have a predictable impact on the perception of the testimony.