Structured probabilistic coherence and the usual counterexamples to probabilistic measures of coherence

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Abstract. The notion of coherence is used in many philosophical, especially epistemological, discussions (for instance, in discussions about the truth-conduciveness of coherence), so a formal explication of this notion is desirable. Yet, such explications available on the market disagree and face a number of counterexamples. Reflecting on common phenomena that underlie these counterexamples leads us to the formulation of a new measure of coherence. It diverges from the known candidates in three important respects: (1) it is not a function of a probabilistic measure and a set of propositions alone, because it is also sensitive to the structure of agent's beliefs, (2) unlike in the case of quite a few coherence measures, it is sensitive to the weakest links in the narration, and (3) it is not obtained by simply averaging confirmation levels between all possible combinations of elements. We apply our measure to the existing counterexamples and compare its performance to the performance of the other measures. It does a better job.