

Kingston University
Faculty of Business and Law

Conference: "Emerging Issues in Business and Law"

Tuesday 22nd June 2010

The meanings of verbal probabilities

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Verbal probabilities, such as "there is a chance" or "it is not sure" are used in daily life as in experts setting to communicate our degrees of certainty concerning the occurrence of events and to make subsequent decisions. In a first and main perspective, verbal probabilities are depicted as fuzzy quantifiers of probability; for example, "there is a chance that it will rain tomorrow" convey a degree of certainty between 10 and 50% and this probability will determine whether one will take an umbrella or not. A more qualitative perspective, suggest that verbal probabilities convey a meaning beyond probabilistic quantity. According to this last perspective, verbal probabilities direct the recipient attention either toward the occurrence of the target outcome or its non occurrence. Indeed, some verbal probabilities increase the availability of reasons supporting the occurrence of the outcome (e.g., there is a chance, it is probable) whereas some others increase the availability of reasons supporting the non occurrence of the outcome (e.g., it is doubtful, it is no sure). This property is called *directionality* and entails a pragmatic function to direct subsequent decision making beyond probabilistic meaning.

In a set of four experiments, we tested the possibility that verbal probabilities convey more than a location on the [0 - 1] probability scale. We investigated how people evaluate the appropriateness of different uncertain statement (containing verbal probabilities) when they were associated with pieces of evidence (supporting or not the occurrence of the outcome). In a functional approach of human information integration, we examined how individuals combine directionality conveyed by a verbal probability phrase (toward the occurrence or the non occurrence of the target event) and a piece of evidence (pro or con the outcome occurrence), to judge the extent to which the uncertain claim is appropriate. We addressed this issue manipulating, in a within subject design, the direction of attention (4 verbal probabilities) and the probative value of evidence associated to the uncertain statement (5 degrees from supporting strongly the occurrence of the outcome to supporting strongly the non occurrence of the outcome). We studied systematically the effect of verbal probabilities communicating the same degree of certainty (low in experiments 1 and 2 and high in experiments 3 and 4) but opposite directionality on appropriateness judgment. The studies were conducted in a legal context where the uncertain event was the guilt (experiments 1 and 3) or the innocence of a suspect (experiments 2 and 4) communicated by a police officer.

According to tenants of the fuzzy probabilistic meaning perspective, different verbal probabilities conveying a same probability level should be judged equally appropriate whatever the piece of evidence associated to it. Whereas according to the pragmatic conception of verbal probabilities, the direction pointed by the uncertain statement was expected to determine appropriateness judgments.

Our results showed that contrary to what would be expected from a purely quantitative interpretation of verbal probabilities, uncertain claims were not judged equally appropriate for a given piece of evidence. Indeed, whatever was the target outcome (guilt or innocence) and the certainty degree communicated, (low or high) participants used directionality as a cue to determine whether the uncertain claim about a suspect was appropriate. Furthermore, we observed that directionality interacted with the piece of evidence associated, according to a pattern of congruence of the focus of attention. Moreover, we found that verbal probabilities with identical directionalities and identical numerical meanings associated with the same piece of evidence were not necessarily judged equally appropriate. This result has important implications for the concept of directionality, as it suggests that it may be encoded both as a function of its orientation (positive or negative) and as a function of its “intensity” (i.e., the strength of its focus of the occurrence or non-occurrence of an event).

Overall, our results plead in favor of a conception of verbal probabilities as a tool of cooperation between conversational partner, aiming to communicate a degree of certainty but as well as to shape the recipient’s attention toward one alternative or the other of the future states of the word. Nevertheless a control of the vagueness of the quantifiers is still needed to claim that the focus of attention is not dependent of the probabilistic meaning.