Comment

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The summary of earlier studies and new data offered by Mosteller and Youtz regarding numerical conversions of probability phrases are both fascinating and encouraging. The regularity in mean results is good news for researchers seeking to understand the language of uncertainty, because it indicates that theoretical explanations need not invoke constructs representing population differences or changes in linguistic habits over time. However, the regularity should not be taken to suggest that a major codification of the language of probability is a goal to be pursued, for at least four reasons. First, individual differences in the use and understanding of linguistic probability expressions are large, reliable, and probably very resistant to change. Thus, a codification would give only the appearance, but not the reality of consistent usage. Second, probability phrases have vague meanings to individuals. Any attempt to render them precise will of necessity overlook the important semantic role of this vagueness. Third, context effects on the meanings of probability phrases are substantial and probably cannot be eliminated. Finally, there is often a need to communicate not only a best probability estimate, but also information about the amount and nature of supporting evidence. Probability phrases often fill this need in a way that would be difficult if a simple mapping were established between a set of phrases and a set of probability values. The remainder of this note justifies these four claims, discusses their implications, and offers alternative suggestions to those of Mosteller and Youtz.

CONSISTENT INDIVIDUAL DIFFERENCES

It is surprising that Mosteller and Youtz ignore the variability in their own data, as well as that reported in many of the other studies they cite, when suggesting that terms have fairly constant meanings. Indeed, numerous studies have documented that the intrapersonal variability in understanding probability terms is far less than the interpersonal variability, suggesting that group mean values do not well represent individuals. For example, Budescu and Wallsten's (1985) subjects provided numerical equivalents to probability terms or rank ordered the terms on three occasions each separated by at least three weeks. Intrasubject variance in the rank assigned to a given phrase or implied by the numerical assignments was only a fraction of the intersubject variance. Furthermore, individuals' rank ordering of adjacent terms was very consistent over the replications. Thus, for example, at a group level *probable* and *likely* yielded very nearly the same numerical equivalent, but some individuals consistently ranked *probable* above *likely* while others did the reverse. Certain rankings, of course, were agreed to by virtually everyone (such as *unlikely, likely*). Similarly, both Beyth-Marom (1982) and Johnson (1973) found individuals to be relatively consistent in assigning numerical values to phrases, while simultaneously there was considerable variability over subjects.

Equally as important, it is highly doubtful that people can or will change their usage simply because a codification has been established. Data that support this statement were obtained in Experiment I reported by Wallsten, Fillenbaum and Cox (1986). Subjects were primarily National Weather Service (NWS), media, and research meteorologists. It is well known among this group that the NWS has established guidelines, presumably of the sort called for by Mosteller and Youtz, for the use of specified probability terms in precipitation forecasts. If the probability of precipitation is judged to be 0.10 or 0.20 then the qualifier *slight chance* may be used; 0.30, 0.40, and 0.50 forecasts may include the phrase *chance;* 0.60 and 0.70 forecasts may use *likely*. Other terms are not allowed in presenting precipitation probabilities. The respondents were asked to give numerical probability equivalents in medical scenarios for various phrases, including phrases codified by the NWS. The study was aimed at a particular context effect and more will be said about it below. The point for the present is that the locations, ranges and sensitivity to context of the meteorologists' numerical interpretations were no different than those of other people and not influenced by the NWS guidelines. An additional, but unpublished study using only NWS meteorologists yielded the same results. If this one example can be generalized, then the prospect for people giving up their normal understanding of a phrase for an imposed one is not very good.

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