Clinical and Actuarial Judgment

In their article, "Clinical versus actuarial judgment" (31 Mar., p. 1668), Robyn M. Dawes et al. address an important issue. But it is an issue that now extends well beyond psychiatric and clinical prediction. True, Meehl's landmark book (1) limited itself to clinical psychology, as does much of the article by Dawes et al., but the question of whether to use the "head" (clinical intuition) versus the "formula" (actuarial or mechanical information combination)—to borrow Meehl's apt terms (2)—is equally relevant for medicine (3), engineering (4), auditing (5), management (6), polygraphy (7), and, as Newell and Simon (8) clearly show, for most decisions and choices made in ill-structured problem domains. Moreover, the dilemma they pose of using either the head or the formula is no longer the main focus of contemporary decision research. Rather, the focus has long ago shifted to evaluating the use of both modes of information combination in tandem.

This trend of combining judgmental with formal modes of information processing probably started in psychology with the suggestions of Edwards (9) and of Sawyer (10) that experts contribute to predictions by providing intuitions about appropriate judgmental quantities that are best aggregated mechanically. Such mechanical procedures are in constant need of judgmental monitoring (11). Dawes (12) has made important contributions to this literature; as he has made others (13), including Meehl (14), whose observation, in this regard, is worth repeating (14, pp. 372-373).

95% of the ordinary decisions made by working practitioners ... [a mental health setting ...] are not comparable in richness and subtlety to that of a good psychoanalytic hour ... but ... when you check out at the supermarket, you don't eyeball the hoop of purchases and say to the clerk, "well it looks to me as if it's about $17.00 worth; what do you think?" The clerk adds it up.

It seems, then, that Dawes as well as Meehl advocates the less divisive (than the title suggests) strategy of using the head and the formula, depending on whether the decision problem lends itself more readily to intuitive judgment or to mechanical combination. Faust, too, does not appear to have given up entirely on clinical intuition. Otherwise, why would be have provided a set of cognitive corrective in a recent article on human judgment (15)? The correctness were designed to help "clinicians to better serve their clients" (15, pp. 426-428).

These polemics aside, it is essential to note that the idea that began with the mechanical aggregation of judgmental inputs has been followed up by contemporary decision analysis, a technology that facilitates decisions that will outperform either a purely clinical or a purely actuarial mode. Decision analysis, a variant of Bayesian thinking, is a formal technique that incorporates Bayes' theorem, but adds three essential components (16, 17). Stated here as questions, these are (i) In my judgment, can this decision problem be decomposed into simpler segments? (ii) What are the consequences of alternative actions of the decision? and (iii) What are the uncertainties in the environment relevant to the actions and their consequences? By focusing on the resolution of these questions by means of a technique that uses both the head and the formula, contemporary decision analysis, which has been applied in a large variety of decision domains (3, 16, 17), avoids favoring either extreme of the clinical-actuarial dichotomy. It does so by blending formal logic with intuitive insight (18). This blend, it has been argued (17), yields better results than the use alone of either the head or the formula.

BENJAMIN KLEINMINTZ
Department of Psychology,
University of Illinois, Chicago, IL 60680

REFERENCES AND NOTES

19. Preparation of this article was partially supported by National Library of Medicine grant No. 1 RO1 LM04583-03.

Response: Kleinmuntz correctly states that the clinical-actuarial issue extends beyond the domain we covered; he has himself made distinguished contributions to this literature. His comments might, however, create erroneous impressions about research outcomes and our views in the domain on which we focused-the diagnosis and prediction of human conditions and behavior.

To restate the problem, if one assumes the option of using the clinical, actuarial, or clinical-actuarial approach (to which Kleinmuntz refers, respectively, as the head, the formula, or the two in combination), which judgment strategy leads to the most accurate diagnoses or predictions of human conditions and behavior? The literature shows, overwhelmingly, that the accuracy of the actuarial method equals or exceeds that of the clinical method. The limited research comparing the actuarial and clinical-actuarial approaches also favors the former strategy. Generalization or lack of generalization to other problem realms does not change the evidence in the domain of human outcomes. This large and consistent body of scientific evidence is so important precisely because the intuition that the research would or should turn out otherwise is so compelling.
If a judgmental task is not amenable to the actuarial approach, then there is no possible conflict between alternative approaches, for only the clinical approach remains. For the great majority of everyday decisions made in the clinic, however, actuarial methods are either available or could be constructed with relative ease. Individuals often overestimate the difficulty or expense involved in developing actuarial methods. Even so minimal an effort as collecting clinical staff opinions about predictive factors, pooling these ratings, perhaps with iterative feedback to convergence (Delphi method), and then compiling an unweighted, unvalidated linear composite may well equal or exceed the accuracy of those same clinicians.

The question of generalization to other fields and problem domains and the possibility of exceptions within clinical psychology and psychiatry raise complex issues that resist simple treatment [which is one reason the topic was covered at such length in Mehl's 1954 book (1)]. As our article indicated, we agree with Kleinmuntz that humans show certain unique capabilities, such as visual pattern analysis, and thus can provide potentially useful input for decision purposes. Nothing, however, prevents a clinician from recording perceptual impressions, such as those gleaned in interviews, in a form conducive to actuarial analysis. The question, then, is how these or other data, once gathered, are best combined or integrated. Almost all of the available evidence suggests the same answer—the actuarial method—and none of the literature that Kleinmuntz cites provides a contrary research demonstration. However, in most of the problems that Kleinmuntz mentions, such as medicine and engineering, research comparing the judgment methods is limited at best, and theorists are often reduced to educated guessing or forecasting.

We three authors in fact have somewhat different views, or forecasts, about possible exceptions and generalization to other problem domains, as detailed in our individual publications (1, 2). For example, one of us (P. E. Mehl) is the most sympathetic to the conjecture that some clinicians in some contexts can integrate some things in a (at present) non-programmable way. Mehl conjectures that some psychoanalytic inferences, especially those made from dreams and free associations in a “good” psychoanalytic hour, have sufficient probability to warrant analytic interpretation suggested by them. No actuarial or computer program exists for doing so. Mehl also shows the greatest leaning toward the conjecture that some clinicians in some circumstances can be sufficiently selective in countervailing actuarial conclusions that these departures pay off. However, as Mehl pointed out in 1954 (1), and as all of us agree, even if such conjectures are accurate, that concession would have negligible impact on the main clinical-versus-statistical issue as we have formulated it. Some psychoanalytic inferences made during psychoanalytic interviews involve a mass of material collected in a unique manner by a specially trained clinician, and more than 99% of all clinical decisions are not of that kind. Kleinmuntz quotes Mehl as conceding more than is intended, for Mehl’s quoted remark was to deny that from a premise about psychoanalytic inferences it is possible to conclude anything about the usual clinical process. Moreover, research shows that when clinicians counteract actuarial conclusions they err more often than not in doing so, for if their counterarguments were correct over half the time they would exceed the accuracy, which they do not. This is a simple truth of algebra, not a theory of clinical cognition or a debatable thesis of epistemology.

In the areas in which our conjectures or forecasts diverge, none of us is confident that he is correct, for if there is anything the judgment research demonstrates it is the difficulty of prediction. All of us agree, however, and we suspect Kleinmuntz does as well, that questions about generalization, application, and optimal match between problem realm and judgment strategy should be a matter of speculation and more the subject of continuing study.

DAVID FAUST
Department of Psychology, University of Rhode Island, Kingston, RI 02881
PAUL E. MEHL
Department of Psychology, Psychiatry, and Philosophy of Science, University of Minnesota, Minneapolis, MN 55455
ROBYN M. DAVIES
Department of Social and Decision Sciences, Carnegie Mellon University, Pittsburgh, PA 15213

REFERENCES

Software

MK MODEL Ver 4.0

Major Upgrade of the Definitive Kinetics Modelling System for IBM PC/PS2 and Compatibles
* Expanded model libraries for pharmacokinetics, pharmacodynamics, combined pharmacokinetics/pharmacodynamics, ligand binding and non-linear pharmacokinetics * Bioequivalence statistical analysis * Supports WKS, DBF and PRN file formats * Enhanced user-interface * Data and parameter number limited only by hardware * New, comprehensive documentation *

The core of MKMODEL is an extended least-squares non-linear regression modelling program. Libraries of biological models are provided and users can add their own. MKMODEL incorporates a powerful Worksheet for data entry and transformation, descriptive statistics and parameter estimation. Results can be graphed and printed (Epson) or plotted ( Hewlett Packard). The manual gives full treatment of theory and practice of kinetic modelling.

Some MKMODEL Keywords


Manual plus four disks for IBM PC/PS2 (384K RAM min, CGA/EGA/VGA/VG3/A) $399

Biosoft

P.O. Box 580, Milltown, New Jersey 08850, Telephone (201) 613 9013.

Circle No. 64 on Readers' Service Card

LETTERS