Three Observations

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Abstract

 Invited commentary on *Naturalistic decision making and the practice of healthcare* by Paul R. Falzer for Journal of Cognitive Engineering and Decision Making.

 Dr. Falzer’s analysis prompts three observations. The first is about the parallel between what has happened with best practices guidelines in medicine and the impact of similar decision aids in other professions. Aids that initially are introduced as support for difficult decisions seem to have a way of morphing from recommendations into requirements and then into performance standards, prompting discontent and resistance. In education, what began as recommendations about curricula and teaching methods became requirements that then became performance standards. In the justice system, guidelines to encourage uniformity in sentencing became mandatory and judges who did not comply were, for good or bad, harshly criticized and in some cases had their decisions changed. Indeed, whenever the cost of failure is high, the go-to solution seems to be to introduce guidelines, make them into requirements, and then use them to set performance standards. This progression, which works reasonably well in industry and in the management of large organizations, recommends itself to those who pay the bills; government, institutions such as hospitals, and insurance companies. But, as Dr. Falzer’s review makes clear, the industrial solution is not necessarily the all-purpose solution it may appear to be, even though the pressure to use it is overwhelming. Aside from outright resistance, the only remedy seems to be to periodically rein in the over-reach. Falzer’s article is an attempt to do this and it will have to be followed by another attempt sometime in the future, and then another after that, and so on.

 The second observation is about the uniqueness of Dr. Falzer’s research which identified the point of diminishing returns of evidence based guidelines as lying at the juncture of levels 1 and 2 in the Dreyfus model of skill development. That is, after a physician grows beyond the novice level, strict adherence to the guidelines is of little value or of negative value. I am not aware of any other attempt to identify limits of usefulness of decision aids, so this is a landmark piece of research. It is an example of the kind of work that can help in reining in over-reach by specifying the circumstances in which decision aids add value and where they begin to diminish it.

 The third observation is about decision making and Dr. Falzer’s focus on progress decisions, which are central to thinking of decision making as a way of controlling the future, which is what decision making is all about. Indeed, it can be useful to think of any remedial system (including teaching and the judicial system) as a control system, presuming we do not get too caught up in the analogy (analogies are thinking aids that, like decision aids, have a point of diminishing returns). I doubt that readers of this journal need instruction about control systems, but for those for whom the analogy is not immediately apparent, let me briefly review. In their simplest form, control systems have three variables; a reference variable (the desired trajectory of the system), a controlled variable (the current trajectory of the system) and a control variable (the means for reducing the difference between the desired and current trajectories over time). Decisions are inflection points in the trajectory of the control variable that alter the speed at which the difference is reduced. The analogy is that attainable health is the reference variable, the desired health trajectory. Illness is the controlled variable, the current health trajectory, Treatment is the controlled variable, the means of reducing the difference between the desired and current health trajectories. And decisions are about whether change is needed and what it will be; starting, changing, or ending a particular course of treatment in light of the size of the difference. Overly simplistic, yes, but suggestive and perhaps of value.

 Deciding on a diagnosis is not so much about the disease *per* *se*, although it accesses useful information about etiology, as it is about the expected prognosis (trajectory) if treatment is not undertaken or if it fails. Deciding on a course of treatment is not so much about the treatment *per* *se* as it is about the expected movement of the patient’s current trajectory toward the desired trajectory. Deciding if a treatment is working (a progress decision) is about whether what is being done is producing movement toward the desired trajectory and if proximity will be achieved in an acceptable time. If not, a decision has to be made about what to do to make both things happen.

 Dr. Falzer briefly described a class of ‘naturalistic’ decision models that can be described as decisions-as-they-are instead of decisions-as-they-should-be. Most, perhaps all, of these models are based on control system reasoning; decisions serve to promote reduction of discrepancies between the ongoing future as it should be and the ongoing future as it will be if something is not done to change it—what is expected happen over time if we do nothing or if we keep doing what we are doing. These models are particularly apt for the kinds of decisions that arise in the ‘helping professions’, where the goal is to change the patient’s, client’s, or customer’s currently expected future into something more desirable. Moreover, the view of decision makers that emerged from the naturalistic viewpoint is pretty favorable; they are seen as striving to do well in a difficult world.

 The models that describe decisions-as-they-should-be, the traditional models in the investigation of decision making, have led to what I regard as an undue scorn for unaided judgment and decision making. In medicine, and elsewhere, the early argument for imposing standardization to fend against bad decisions was strengthened by a simultaneous flood of (largely) laboratory research in which participants were given structured tasks that required specific judgments or decisions. Their answers were then compared to the judgments or decisions an expert would make using one or more tools designed specifically for such tasks; decision theory, probability theory, sampling theory, multi-attribute utility theory, formal logic, and so on. The findings were that people did not do well relative to the expert (which should not surprise anyone, given that experts and their tools only exist because of a recognized need for help with these kinds of tasks). The view of decision makers that emerged from this viewpoint is pretty dark; they are inept and in need of expert help.

 So, we have two very different views of decision making and decision makers. The difference lies in assumptions about what decision makers want their decisions to accomplish. The decisions-as-they-should-be view assumes the goal is to solve the problems that the various tools were devised to solve. Success is measured by the distance between two points, the decision maker’s solution and the tool’s solution. As it turns out, most of us are not very good at point solutions. Moreover, this view regards choice decisions as gambles; once a bet is placed, there is nothing that can be done but await the outcome.

 The decisions-as-they-are, the naturalistic view assumes that the goal is to ‘nudge’ events toward a desirable trajectory that extends into the future. But, the future is a moving target so nudging it toward desirability is never successful for long. Is an ongoing effort that must change as conditions change. Which is to say, decision makers are not passive gamblers, they are actively engaged in moving things in a desirable direction and their efforts extend across time and change in light of successes and failures and the actions of outside forces. And, sometimes, nudging is insufficient, requiring major change in strategy—a shove.

 Nudges and shoves are the results of progress decisions; appraisals of progress toward a desirable future. Insufficient progress prompts decisions about appropriate nudges and shoves. And the greater the decision maker’s knowledge about causal factors, both in what is causing the lack of progress and about what will cause things to get back on track, the greater his or her flexibility and ability to select the appropriate nudges and shoves.

 Nudging and shoving are a better model of what physicians do than point solutions, but guidelines seldom reflect this. Instead, they try to make each decision a ‘right’ decision rather than simply one in a series of decisions that move things toward a desired future and try to keep them there or very nearly there. No wonder experienced physicians find guidelines restrictive, they are much more able and flexible than the guidelines presume or allow.

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