

# Micro-Effects of Language on Risk Perception in Drug Prescribing Behavior

Harold J. Bursztajn, MD; Benzion Chanowitz, PhD; Thomas G. Gutheil, MD; and Robert M. Hamm, PhD

The decision to prescribe neuroleptics for the treatment of psychosis involves a potentially tragic choice between, on the one hand, a probability of psychosis and a probability of side effects, such as tardive dyskinesia, on the other. In an experimental paradigm, we examined this decision process. We hypothesized that linguistic factors considered irrelevant under classical formulations of individual choice behavior would have a significant effect on this decision. All subjects were presented with a case vignette involving a potentially psychotic patient. Subjects were then asked what probability of tardive dyskinesia they would either "accept" or "risk" in order to prevent psychotic decompensation. In addition this factor was crossed with a contextual factor that varied the patient's age. The effect of "risk" versus "accept" language was evident in significantly different patterns of decision making across age groups. The data have important implications for clinical decision making, the elicitation of informed consent, and the directions that the courts have taken in malpractice and patient's rights cases.

The decision whether or not to prescribe a neuroleptic drug for a psychotic patient represents an increasingly common source of anxiety for the psychiatrist in light of emerging case law.<sup>1-3</sup> These drugs effectively inhibit psychosis, but their use may induce tardive dyskinesia.

How does one weigh these risks and benefits in order to determine what is good medical practice and what is medical malpractice? It was in the context of this problem that the legal foundations were first established for psychiatric patients' rights to refuse treatment.<sup>4-6</sup> In another well-publicized case, *Clites v. State of Iowa*,<sup>7,8</sup> a mentally retarded patient was awarded nearly \$800,000 in damages for neuroleptic-induced tardive dyskinesia. The physician's actions in this case were judged to be negligent in part because treatment with neuroleptics was not considered to be adequate care for the patient in question. However, when weighing the risks and benefits of

---

Drs. Bursztajn and Gutheil are affiliated with the Program in Psychiatry and the Law, Massachusetts Mental Health Center, 74 Fenwood Road, Boston, MA 02115. Dr. Chanowitz is affiliated with the Department of Psychology and the Graduate Center, Brooklyn College, C.U.N.Y., New York, NY. Dr. Hamm is affiliated with the Center for Research on Judgment and Policy, University of Colorado, Boulder, CO. The authors wish to thank Prof. Miriam Schustack of the Department of Psychology and Social Relations, Harvard University, for helpful suggestions in the design of this study. This paper was presented at Society for Medical Decision Making meetings, November 1983, Toronto. Abstract published in: *Medical Decision Making* Vol. 3, p. 539, 1983.

## Risk Perception

decision. Specifically, we hypothesized that subjects would either repress or act out (in the "risk" case) or consider (in the "accept" case) the anxieties that emerge in prescribing neuroleptic drugs to elderly patients. The emergence of two distinct patterns across age would confirm that two distinct judgment strategies do exist and can be preferentially induced.

## Method

Subjects were a group of 60 persons attending a Conference on Psychiatry and the Law: Strategies of Malpractice Prevention. They included physicians (N = 20), attorneys (N = 15), and other (e.g., registered nurses, social workers; N = 25). The current study population was predisposed toward a homogeneity of disciplinary responses by virtue of being post-tested immediately following presentation on risk management by two of the co-authors (H.B. and T.G.). We have addressed the issue of disciplinary role influences on risk perception elsewhere.<sup>15</sup> Subjects were presented with a brief case vignette of a psychotic patient that described costs and benefits of prescribing a neuroleptic drug. The clinical part of the vignette read as follows:

A [70-year-old] patient of yours becomes violently psychotic when taking any less than a neuroleptic equivalent of 400 mg of Thorazine. As you know, Thorazine is effective in reducing psychotic behavior, but its continuing use is associated with tardive dyskinesia (involuntary muscle spasm).

On different forms of the vignette, the age of the patient was varied as 20 years old, 40 years old, or 70 years old. Subjects were then asked to answer two questions with reference to this case. The

first question was designed to elicit how they were subjectively disposed to *act* in this case in prescribing a neuroleptic drug that might induce TD. The second question was designed to elicit their objective assessment of the probability that this patient would develop TD if the neuroleptic drug was prescribed.

The first question was worded in one of two ways. In one form, the question was worded as follows:

What probability of tardive dyskinesia would you [risk] to prevent recurrence of psychosis in this [70-year-old] patient? Circle one of the numbers below.

In the other form, the question was worded, with one word changed, as follows:

What probability of tardive dyskinesia would you [accept] to prevent recurrence of psychosis in this [70-year-old] patient? Circle one of the numbers below.

In answering one of the above questions, subjects were required to circle the probability level of TD that they would be willing to risk/accept in prescribing neuroleptic drugs. The presented levels ranged from 0% to 100% by intervals of 10% (see Appendix).

All subjects then received the same second question, which read as follows:

What is the likelihood that this patient will get tardive dyskinesia?

Subjects again were required to express their assessments of probability in percentile form. By subtracting each subject's answer to the second question from their answer to the first, the responses were adjusted to represent whether (+) or not (-) the subjects would prescribe in this situation. Subjects' responses to the second question

neuroleptic treatment, it is unclear what would constitute a good clinical judgment strategy. Without such guidance psychiatrists may be forced to practice "defensive medicine" in order to avoid accusations of malpractice.

The process of prescribing drugs and the clinical judgment strategies that underlie this prescribing behavior have become the focus of increasing research interest.<sup>9,10</sup> Much of this research is directed toward determining whether there is consistency in prescribing behavior and, if so, the factors that govern the documented consistency. A number of patient characteristics (e.g., age, sex, symptom profiles) and physician characteristics (e.g., age, training, practice size) have been found to affect prescribing behavior.<sup>11,12</sup> However, such research has only demonstrated regularities in prescribing behavior given certain physician or patient characteristics that remain stable over time. Less attention has been paid to how prescribing behavior might be systematically influenced by the manipulation of situational variables.

This pilot study examines the effect that one such variable may have on drug-prescribing decisions. The language in which a hypothetical drug-prescribing decision was presented was varied in a way that should be irrelevant by traditional standards of clinical practice and contemporary decision theory. It was hypothesized that two distinct clinical judgment strategies are available for difficult medical decisions. The micro-language manipulation was designed to elicit these two strategies.

Subjects were asked either what probability of tardive dyskinesia (TD) they would *risk* or what probability of TD they would *accept* in prescribing a neuroleptic drug. It was hypothesized that the word "risk" would make the dangers of the situation salient, and that subjects in the "risk" condition would be made to feel solely and completely responsible for whatever outcome might follow from their decision. With the word "accept," on the other hand, the dangers of the situation would remain salient, but in conjunction with other, equally relevant factors. It was hypothesized that subjects in the "accept" condition would act on the assumption that risks exist no matter what course of action is taken. These subjects, therefore, would be better able to acknowledge and assess rationally the risks in the hypothetical situation presented to them.

To demonstrate these patterns we exploited a relatively well-documented finding regarding the relationship between TD and neuroleptic drugs. Recent research<sup>13,14</sup> indicates that advancing age is associated with increasing prevalence of TD for patients receiving neuroleptic drugs. Hence, varying the age of the patient should produce concurrent variation in drug prescribing decisions. Subgroups within each of the two experimental groups (i.e., "risk" versus "accept") received information that the patient was either young, middle-aged, or old in an otherwise identical case vignette. We expected different patterns of drug-prescribing behavior across patient age groups as a function of the language employed in eliciting drug-prescribing

### Appendix

A [40-year-old] patient of yours becomes violently psychotic when taking any less than a neuroleptic equivalent of 400 mg of Thorazine. As you know, Thorazine is effective in reducing psychotic behavior, but its continuing use is associated with tardive dyskinesia (involuntary muscle spasm).

What probability of tardive dyskinesia would you [risk] to prevent recurrence of psychosis in this [40 year-old] patient? Circle one of the numbers below:

low probability	high probability
0%   10%   20%   30%   40%	50%   60%   70%   80%   90%   100%

Profession: \_\_\_\_\_ Years in profession: \_\_\_\_\_

Age: \_\_\_\_\_ Sex: \_\_\_\_\_

were an expression of their baseline assessments of the probability of inducing TD if the patient received Thorazine. In subtracting this figure from the response to the first question (that assessed the willingness to act in prescribing the drug), we assessed the willingness of subjects to prescribe and thereby take risks that either undershot or overshot the baseline probability of inducing TD. This adjusted risk figure was used to compare the drug prescribing behaviors of different subjects with different assessments of the baseline probability of inducing TD.

These adjusted responses of the subjects were embedded in a 3 (age: 20, 40, or 70 years old) by 2 (language: risk or accept) between-subjects design. An analysis of variance<sup>16</sup> was performed to examine the pattern of subjects' responses. It was hypothesized that "risk" subjects would be motivated to reduce uncertainty and anxiety; they would take steadily decreasing risks with the increasing age of patient in response to the anxieties that attend the treatment of elderly patients. This effect was hypothesized not to occur among "accept"

subjects, who would be induced to act under a "cooler" judgment strategy.<sup>17</sup> Under the latter conditions, subjects might concede that uncertainty exists regardless of which alternative is chosen. As such, they would be willing to cope with rather than yield to the anxieties that accompany the treatment of elderly patients.

### Results

The primary dependent measure was the adjusted figure (i.e., each subjects' response to question 1 minus the response to question 2) that represents the probability of TD that each subject was willing to risk/accept in prescribing a neuroleptic. A distinctive pattern of variation in this measure emerges when subjects' responses across age groups are compared. Table 1 presents these data. As can be seen, "risk" subjects radically decrease the risks that they are willing to take with the increasing age of patient, while "accept" subjects are willing to take increasing chances. These data were subjected to a two-way analysis of variance and yielded the predicted interaction effect,  $F(2,52) = 4.59, p < .015$ .

## Risk Perception

**Table 1**  
**Responses Across Age Groups**

	20 yr old	40 yr old	70 yr old
<i>Subjective assessment/action question</i>			
Accept ( $\bar{X}$ = 42.67)	33.33%	41.82%	52%
Risk ( $\bar{X}$ = 45.81)	47.27%	49.00%	41%
<i>Objective assessment question</i>			
Accept ( $\bar{X}$ = 41.88)	47.45%	36.55%	41.25%
Risk ( $\bar{X}$ = 39.98)	24.50%	35.92%	59.10%
<i>Adjusted willingness to take chance of tardive dyskinesia</i>			
Accept	-13.71%	+5.27%	+10.75%
Risk	+26.50%	+10.74%	-18.10%

There were no main effects. That is, neither language nor age of patient *per se* was responsible for variations in subjects' responses. Rather, differences in micro-language induced different levels of willingness to take chances as a function of the varying age of patient. The data indicate that all subjects were aware that the probabilities for TD change as a function of changing age, but that "risk" and "accept" subjects used this perception differentially as a basis for action. Under "risk" versus "accept" conditions, subjects employed different judgment strategies in order to arrive at a drug-prescribing decision in a situation that becomes increasingly exacerbated with the increasing age of the patient.

### Discussion

The data in our pilot study indicate that prescribing behavior is affected by the way in which risks are perceived and

that the orientation toward risks can be significantly affected by micro-language differences in the presentation of the situation. Distinctive orientations foster different patterns of response to the uncertainties and anxieties that are presented in the situation, and language can be effective in producing one attitude or the other. The inconsistent patterns of decision produced by the use of "risk" versus "accept" cannot be accounted for by the decision models of classical utility theory or its modern descendants.<sup>18, 19</sup> These models rely on context-independent factors that do not distinguish between the "risk" and "accept" manipulations that produced different patterns of decision across age.

Earlier work<sup>20, 21</sup> has described two paradigms for both medical practice and decision behavior. Under the mechanistic paradigm, medicine is practiced with the assumption that there are sharply

defined causes responsible for observed pathologies and that these pathologies can be unerringly treated by eliminating those causes. Complete certainty is within reach through the strict use of the classically defined experimental method. The practitioner continues to search for "the cause" and "the proper treatment" until certainty is achieved.

Under the probabilistic paradigm, knowledge is gathered about a range of factors that are probabilistically associated with a given pathology. Complete certainty about either "the cause" or "the proper treatment" is conceded to be an unrealistic goal from the outset. Instead, one seeks relevant information while recognizing that there is no *completely* satisfying solution to the problem of how to treat. The search, then, is not driven by the attempt to achieve complete certainty.

We believe that these paradigmatic distinctions are at the root of the inconsistent patterns of choice behavior among the "risk" and "accept" subjects. Each word elicits a distinctive orientation to the dangers of a potentially tragic situation. Under the "risk" condition, where complete certainty is presumed to be an achievable goal, subjects act out the anxieties that emerge when treating elderly persons. The practice of "defensive medicine" thrives under such circumstances. For the prescriber, an already dangerous situation involving psychotic patients and neuroleptic drugs becomes all the more threatening, by the context-specific variation of age, as the age of the hypothetical patient increases. Subjects are less willing to intervene ac-

tively and therefore take fewer active risks (i.e., they are willing to "risk" only a low probability of TD).

Under the "accept" condition, the probabilistic orientation is implicitly instituted and complete certainty is recognized as an unachievable goal. From the outset, uncertainty is an ineliminable aspect of treatment. The micro-language of "accept" seems to be effective in helping subjects realize and consciously cope with the added uncertainties that are introduced when treating an elderly patient, and to be able to balance the benefit of psychosis control with the potential tragic outcome in a younger person of being disfigured for life by tardive dyskinesia.

In weighing the merits of the two orientations, it is arguable that the probabilistic paradigm elicited by the word "accept" is the more productive framework, and that the pattern of drug prescribing displayed by subjects in the "accept" condition constitutes better medical practice. Despite the fact that the probability of inducing TD increases with the age of the patient, it would appear to be an overriding consideration that fewer chances should be taken with younger patients who have longer lives ahead of them.

In summary, if micro-language differences are effective in altering risk perception in risky situations, then in principle we have a tool in hand for adjusting the amount of risk that persons are willing to assume in such situations. Risks are psychologically more acceptable once it is made clear, by the language that is used, that any chosen course of

## Risk Perception

action entails the acceptance of uncertainty. Under such conditions, the task becomes one of minimizing the risks rather than avoiding them. If, however, the language that is used implies that risks can in principle be completely eliminated, then either people will engage in a futile search for a risk-free course of action, or the risks will be denied, repressed, or acted out as in the form of defensive medicine.

In suggesting that the manner in which the clinician frames the question of costs and benefits of treatment and side effects will significantly influence the decision strategy, one implication is that, when facing decisions involving tragic choices, clinicians should ask themselves the questions of treatment choice in both "risk" and "accept" terms. This may be a useful corrective to the overemphasis on control and clinician omnipotence when framing the question solely in anxiety-provoking "risk" terms. By keeping in mind that in science some degree of uncertainty must be accepted, the clinician can take a cooler look at the relative merits of the available treatment options.

A clinician in this frame of mind can also use the informed consent process as an opportunity for building a therapeutic alliance.<sup>22</sup> Attention must be paid to the language of informed consent forms in which patients are asked to risk side effects from a recommended course of treatment. Too often these forms leave the impression that risk can be avoided by abstaining from the treatment. An informed consent dialogue that clarifies the need to accept the costs of any course

of action (including inaction) will allow for wiser consideration of treatment choices—by both physician and patient. By fostering sound clinical decisions, increased patient participation in decision making, and greater trust between patient and physician, such a process stands to reduce both the fear and the actuality of malpractice liability.

## References

1. Davis JM, Schyve PM, Parkovic I: Clinical and legal issues in neuroleptic use. *Clin Neuropharmacol* 6:117-28, 1983
2. Wettstein RM: Tardive dyskinesia and malpractice. *Behav Sci Law* 1:85-107, 1983
3. Gelenberg AJ: \$375,000 for tardive dyskinesia. *Biol Therapies Psychiatry* 3:41-2, 1982
4. *Rogers v. Okin*. 634 F.2d 650 (1st Cir. 1980)
5. *Rogers v. Okin*. 478 F. Supp. 1342 (D. Mass. 1979)
6. *Mills v. Rogers*, 457 U.S. 291, 102 Sp. Ct. 2442 (1982)
7. *Clites v. State of Iowa*, no. 46274 (August 7, 1980, 4th District)
8. *Clites v. State*, 322 N.W. 2d 917 (Iowa Ct. App. 1982)
9. Fisch H-U, Hammond KR, Joyce CRB, O'Reilly M: An experimental study of the clinical judgment of general physicians in evaluating and prescribing for depression. *Br J Psychiatry* 138:100-9, 1981
10. Rudestam KE, Tarbell SE: The clinical judgment process in the prescribing of psychotropic drugs. *Int J Addictions* 16:1049-70, 1981
11. Yamamoto J, Goin MK: Social class factors relevant for psychiatric treatment. *J Nerv Ment Dis* 142:332-9, 1966
12. Shader RI, Binstock WA, Scott D: Psychiatrists' biases: who gets drugs? *Soc Sci Med* 2:213-6, 1968
13. Mwkheeye S, Rosen AM, Cardenas C, Varia V, Olarte S: Tardive dyskinesia in psychiatric outpatients: a study of prevalence and association with demographic, clinical and drug history variables. *Arch Gen Psychiatry* 39:466-9, 1982
14. Kane JM, Smith JM: Tardive dyskinesia: prevalence and risk factors, 1959 to 1979. *Arch Gen Psychiatry* 39:473-81, 1982
15. Bursztajn H, Chanowitz B, Kaplan E, Guth-eil TG, Hamm RM, Alexander V: Medical

- and judicial perceptions of the risks associated with use of antipsychotic medication. *Bull Am Acad Psychiatry Law* 19:271-5, 1991
16. Keppel G: *Design and Analysis: A Researcher's Handbook*. Englewood Cliffs, NJ, Prentice-Hall, 1973, pp. 187-223
  17. Janis IL, Mann L: *Decision Making*. New York, Free Press, 1977
  18. Kahneman D, Tversky A: Prospect theory. *Econometrica* 47:263-92, 1979
  19. Tversky A, Kahneman D: The framing of decisions and the psychology of choice. *Science* 211:453-8, 1981
  20. Bursztajn H, Feinbloom RI, Hamm RM, Brodsky A: *Medical Choices, Medical Chances: How Patients, Families, and Physicians Can Cope with Uncertainty*. New York, Routledge, 1990
  21. Bursztajn H, Hamm RM: Medical maxims: two views of science. *Yale J Biol Med* 52:483-6, 1979
  22. Gutheil TG, Bursztajn H, Brodsky A: Malpractice prevention through the sharing of uncertainty: informed consent and the therapeutic alliance. *N Engl J Med* 311:49-51, 1984