Blind Spots in White Coats: Psychological Processes Underlying Judgment and Decision-Making

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ABSTRACT Clinical decisions are influenced by how physicians represent uncertainty, interpret disagreement, combine assessments, and evaluate new evidence. These psychological processes can support effective decisions, but they can also cause plausible alternatives to be overlooked or discounted. In this conceptual framework, the author developed a different conceptual framework that brought together findings from cognitive and social psychology, linking them through how clinicians considered alternative explanations and judgments. Support theory explains why possibilities receive different probability estimates depending on whether they are explicitly named or left unspecified. Naïve realism, the experience of one's own judgments as objective reflections of reality, helps explain why clinicians may dismiss disagreement rather than examine its basis. Research on collaboration within dyads shows how independently formed assessments can be integrated, whereas groupthink illustrates how pressure for consensus may suppress alternative views. Biased assimilation explains how prior commitments can influence the evaluation of subsequent evidence. Experimental studies using clinical scenarios, together with illustrative examples, connect these processes to diagnostic reasoning, prognosis, consultation, and teamwork. The framework suggests practical safeguards, including explicit consideration of plausible alternatives, examination of the assumptions underlying disagreement, independent assessment before discussion, and comparable scrutiny of supportive and contrary evidence. Improving clinical judgment therefore requires attention not only to the quality of scientific evidence but also to the psychological processes through which clinicians interpret and apply it.

IMAJ 2026; 28: 730–735

KEY WORDS: clinical judgment, collaboration, decision making, naïve realism, support theory

Healthcare professionals routinely make judgments under uncertainty, with incomplete information, time pressure, and emotional strain. Physicians must estimate diagnostic and prognostic probabilities, interpret ambiguous findings, communicate uncertainty, and integrate the opinions of colleagues before choosing investigations or treatment. These tasks depend on psychological processes that determine which possibilities enter consideration, how much weight they receive, and whether they are reconsidered as information accumulates. Understanding these processes can help explain both effective clinical reasoning and predictable errors.

The landmark studies by Kahneman and colleagues [1-3] established a framework for understanding heuristics and biases in judgment and decision making. Heuristics are efficient mental shortcuts that often support rapid and useful judgments but can also produce systematic departures from normative reasoning. Another review in this issue of the *Israel Medical Association Journal* (*IMAJ*) examines how familiar heuristics and biases, including anchoring, availability, representativeness, and framing, affect medical decision making [4].

This conceptual framework examines how psychological processes shape the consideration of alternative explanations and judgments in clinical care.

The framework connects four aspects of clinical reasoning. Support theory explains how the representation of diagnostic and prognostic alternatives influences subjective probability judgments, particularly when possibilities remain unspecified. Naïve realism and the illusion of personal objectivity help explain how clinicians interpret disagreement with colleagues and patients. Research on dyadic collaboration and groupthink examines how the conditions under which judgments are combined can support or suppress consideration of alternative views. Biased assimilation explains how an emerging diagnostic preference can shape the interpre-

tation of subsequent evidence and hinder reconsideration.

Together, these perspectives suggest that improving clinical judgment requires not only high-quality scientific evidence but also an understanding of the psychological processes through which evidence is interpreted, discussed, and translated into clinical decisions. They further suggest practical strategies for improving diagnostic reasoning, communication, teamwork, and ultimately the quality and safety of patient care.

REPRESENTING ALTERNATIVES

Support theory and unspecified possibilities

When faced with an uncertain event, such as the outcome of surgery, clinicians are often required to assess the likelihood of improvement to help patients decide whether to undergo the procedure. Do people assign the same probability to equivalent events when those events are represented differently? The practical importance of this question has made subjective probability a longstanding topic of research across psychology, philosophy, and statistics.

POSSIBILITIES THAT ARE NOT EXPLICITLY NAMED MAY RECEIVE INSUFFICIENT WEIGHT. UNPACKING A BROAD RESIDUAL CATEGORY SUCH AS *OTHER CAUSES* INTO SPECIFIC NAMED POSSIBILITIES REDUCES THE DISCOUNTING OF UNSPECIFIED ALTERNATIVES.

Normative probability theory requires equivalent events to be assigned identical probabilities. However, empirical research shows that people often violate this requirement by assigning different probabilities to different descriptions of the same event. Fischhoff and colleagues [5], for example, found that experienced mechanics and laypeople assigned higher probability to causes of automobile failure that were explicitly named, rather than presented as a single general category (e.g., other causes). Explicitly describing the possibilities changed their assigned probability even though the underlying set of events remained the same.

Description can also affect decisions about uncertain prospects. Participants were willing to pay a higher premium for hypothetical health insurance when its coverage explicitly mentioned hospitalization caused by disease or accident than when it covered hospitalization for any cause, although the latter provided broader coverage [6]. Explicitly naming the two causes apparently made hospitalization easier to imagine and increased the appeal of the insurance.

These results suggest that even experts may give insufficient weight to possibilities that are not explicitly stated, highlighting the need for a descriptive theory that explains how the framing and representation of events shape judgment and decision making. Support theory provides such a framework [7].

Support theory is a descriptive account of subjective probability in which judgments depend on the support evoked by a description of an event. Explicitly listing its component possibilities can increase its judged probability relative to leaving those possibilities implicit. This concept is known as unpacking.

For example, if asked to estimate whether a patient's chest pain has a cardiac origin or is attributable to some other cause, the alternatives contained within *other* are left implicit. If asked instead to estimate whether it has a cardiac, gastrointestinal, musculoskeletal, or other cause, probability is distributed across the larger set of possibilities, leaving less probability assigned to the residual category: other cause. The set of possible causes has not changed; only its description has. Making alternatives explicit therefore draws probability away from the catch-all category in which they were previously included.

DISCOUNTING UNSPECIFIED POSSIBILITIES IN MEDICAL DECISION-MAKING

Redelmeier and colleagues [8] examined diagnostic and prognostic probability judgments and a diagnostic investigation decision in brief clinical scenarios. The studies tested whether the discount predicted by support theory would occur even among trained professionals within their domain of expertise.

Diagnostic unpacking: the residual category

House officers were asked to evaluate a 22-year-old woman who presented with 12 hours of right lower quadrant abdominal pain and whose last normal menstrual period had occurred four weeks earlier. One randomly selected group assigned probabilities to gastroenteritis, ectopic pregnancy, and the residual category *none of the above*. For the other group, the list included the same two diagnoses plus three more: appendicitis, pyelonephritis, pelvic inflammatory disease, and the same residual category, *none of the above*. The two tasks differed only in that the residual category in the short list was partially unpacked in the long list. The physicians were told that the patient had only one condition; thus, the judged probabilities should sum

to 100%. Logically, the probability of the category *none of the above* in the short list should equal the sum of the probabilities of the corresponding possibilities in the long list (i.e., the three added possibilities and the residual category). However, as predicted by the unpacking principle, the average probability assigned to the residual in the short list was lower (50%) than the sum of the corresponding probabilities in the long list (69%). Unpacking the residual category also changed the probabilities assigned to the specific diagnoses. For example, the average probability assigned to gastroenteritis was significantly higher in the short list (31%) than in the long list (16%). Unpacking the residual reminded physicians of diseases they might not have considered or increased the salience of diagnoses they had considered.

Prognostic unpacking: attention effect

Expert physicians evaluated the case of a 67-year-old retired farmer admitted with an acute myocardial infarction. He had experienced four hours of chest pain and had anterior ST-segment elevation, but showed no pulmonary edema, hypotension, mental status change, dysrhythmia, or heart block. Separate groups estimated the probability of one of four mutually exclusive prognoses: death during hospitalization, death within one year after surviving hospitalization, survival for between one and ten years, or survival beyond ten years. The respective mean estimates were 14%, 26%, 55%, and 69% respectively, totaling 164% rather than 100%.

Unlike the first case, this result cannot be explained by physicians being reminded of overlooked possibilities, since only one prognosis was ever presented to any given physician. It illustrates unpacking through attention: explicitly naming one interval on a continuum increases its salience relative to the unspecified remainder.

Binary complementarity: ruling out an alternative explanation

The preceding results might have reflected a general tendency to overestimate whichever outcome respondents were asked to evaluate. To test this possibility, medical students considered the same myocardial infarction case but estimated only two complementary outcomes, *surviving hospitalization* or *dying during hospitalization.* The two mean estimates were 78% and 21%, totaling 99%. When the focal outcome was evaluated against a single, explicitly defined complement, the estimates therefore remained close to the normative total.

The near complementarity of these binary judgments argues against a general tendency to overestimate every focal outcome. Instead, the earlier findings are consistent with greater support being assigned to explicitly specified outcomes relative to an unspecified remainder.

Extending to decisions

To determine whether the effect extended beyond probability judgment to clinical action, medical students considered a journalist with a two-day history of fever and headache, who had a 15-year history of lupus erythematosus and was taking acetaminophen and daily prednisone. She did not look sick, vital signs were normal, and examination revealed tenderness over the frontal sinuses and pharyngeal erythema without neck stiffness, tympanic membrane redness, or cervical adenopathy. Half of the randomly selected students received a sentence naming a single candidate diagnosis (sinusitis); the other half received a sentence naming five possibilities (central nervous system vasculitis, lupus cerebritis, intracranial opportunistic infection, sinusitis, and subdural hematoma). Despite an identical underlying clinical picture, students were more likely to recommend a computed tomography scan after the unpacked list (32%) than after the packed list (20%). Thus, the way diagnostic possibilities were presented influenced a decision about investigation as well as probability judgments.

SEEK INDEPENDENTLY FORMED ASSESSMENTS AND DISCUSS THE REASONS FOR DISAGREEMENT. CONSULTATION IS MOST USEFUL WHEN ALTERNATIVE VIEWS ARE EXAMINED AND DISSENT CAN BE EXPRESSED OPENLY. PREMATURE CONSENSUS CAN ELIMINATE PRECISELY THE DIVERSITY OF JUDGMENT THAT MAKES COLLABORATION VALUABLE.

These findings show that even experienced physicians are susceptible to discounting unspecified possibilities. They are consistent with contributions from both memory and attentional processes. Unpacking broad diagnostic categories into specific components may help clinicians consider possibilities that would otherwise receive insufficient weight.

INTERPRETING DISAGREEMENT

Naïve realism and the illusion of personal objectivity

Naïve realism [9] is the tendency to experience one's own perceptions and judgments as direct and objective reflections of reality. It involves three related convictions: that one sees the situation as it truly is; that reasonable and well-informed people exposed to the same evidence

should reach similar conclusions [9-11]; and that those who disagree are likely to be inadequately informed or influenced by bias, self-interest, or irrationality [12].

Naïve realism therefore creates an asymmetry in how agreement and disagreement are understood: agreement appears to validate one's position, whereas disagreement prompts scrutiny of the other person rather than reconsideration of one's own interpretation.

The illusion of personal objectivity is a product of naïve realism. It refers to the conviction that one's own judgment reflects the evidence without distortion and that one sees things as they really are [12].

When people share an interpretation, this conviction may go unchallenged. However, when the same situation is perceived differently, it becomes problematic. A patient and clinician may attach different significance to the same symptom, and two clinicians may weigh the same findings differently or disagree about how candor should be balanced with preserving hope. Treating these differences as a source of information to be explored, rather than as evidence of the other's irrationality, may reveal assumptions that would otherwise remain unexamined.

THE FALSE CONSENSUS EFFECT

A related tendency is the false consensus effect: people overestimate how widely others share their own judgments or choices [11,13]. This finding fits with the expectation, associated with naïve realism, that reasonable people exposed to the same evidence will inevitably reach the same conclusions.

In clinical settings, this tendency may lead physicians to give insufficient consideration to disagreeing colleagues, particularly when those colleagues differ in professional affiliation, educational background, clinical training, or relevant life experience. When physicians assume that any reasonable and well-trained practitioner would share their assessment, they may attribute dissent to inadequate information or flawed judgment rather than examine the reasoning behind the alternative view. This assumption may make them less receptive to different perspectives on treatment and broader clinical questions and less inclined to seek a second opinion when it could be especially valuable.

COMBINING JUDGMENTS

The wisdom of dyads and crowds

The wisdom of crowds refers to the finding that aggregating independent judgments from a group of people typically produces a more accurate estimate than the judgment of any single member of that group [14]. This benefit arises because individual errors, which stem from each person's particular biases or limitations in information, tend to cancel out when judgments are combined, leaving a more reliable collective estimate. The larger the group, the higher the accuracy.

The same statistical logic of judgment aggregation also applies to small groups, even as small as two. Independent estimates can contain partly different information, so combining them may improve accuracy even when only two decision makers are involved. The potential benefit may be especially large when initial estimates diverge. Naïve realism may nevertheless lead people to attribute disagreement to error or bias in the other person and discount that person's input [12,15,16].

When making important life decisions, people often seek advice but then need to decide how much weight to give that input. As implied by naïve realism, people fail to give due weight to such input, especially when it disagrees with their own view. Moreover, the tendency to attribute bias to another's view is directly proportional to the extent to which those views differ from one's own [12]. Yet this is precisely the situation in which giving adequate weight to the advisor's input may be most beneficial [16].

Liberman and colleagues [17] tested two ways of counteracting the underweighting of peer input. In one study, requiring participants to assess the relative objectivity of their own and their partner's estimates before revising their judgments reduced underweighting. In another, partners discussed the task and produced a joint estimate. The resulting improvement in accuracy was largely retained when participants later returned to individual judgments.

These findings suggest that effective consultation may require more than obtaining another opinion. In a prognostic consultation, two clinicians may benefit from applying comparable scrutiny to their own and others' reasoning, comparing the information and assumptions underlying their estimates, and examining important discrepancies explicitly. Related studies found benefits of collaboration in quantitative estimation tasks and in attorneys' predictions of jury verdicts [18,19].

Such procedures might support medical judgments ranging from estimating a patient's prognosis to assessing whether a physician is ready to practice independently. Examining and integrating collegial input, rather than merely soliciting it, may help clinicians make fuller use of consultation.

GROUPTHINK AND THE SUPPRESSION OF ALTERNATIVES

The literature on the wisdom of crowds and the wisdom of dyads demonstrates that collaborative decision making can improve judgment accuracy by integrating multiple independent judgments. A common principle emerging from both lines of research is that these benefits critically depend on preserving the independence of individual reasoning before opinions are exchanged and integrated. When this prerequisite is violated, the same collaborative processes that ordinarily improve decision making may instead amplify diagnostic error.

Collaboration can also narrow consideration. In a numerical estimation experiment, social influence reduced the diversity of estimates and increased confidence without a corresponding improvement in accuracy [20]. Groupthink is a related concern in which the desire for consensus and group cohesion overrides critical evaluation of alternative viewpoints. Strong hierarchy, time pressure, or a perceived need for unanimity may encourage members to withhold reservations and accept an emerging consensus [21]. Loss of independence can therefore undermine the potential value of having several people consider a case.

Clinical decision making increasingly relies on collaboration among healthcare professionals. Multidisciplinary teams, tumor boards, ward rounds, and emergency response teams provide opportunities to integrate complementary expertise, reduce individual cognitive biases, and improve diagnostic and therapeutic decisions. However, collaborative decision making is not inherently superior to individual judgment. Whether groups outperform individuals depends critically on how information is shared, evaluated, and integrated.

Agreement within a like-minded professional community can preserve harmful practices and marginalize clinicians who challenge prevailing assumptions [22]. Radical mastectomy and stress-based accounts of peptic ulcer diseases illustrate the capacity of professional consensus to outlast the evidence supporting it. The quality of collective decisions therefore depends less on the number of participants than on whether their interaction protects independent assessment and critical challenge.

EVALUATING NEW EVIDENCE

Biased assimilation

Research on attribution, confidence, and belief perseverance provides a broader context for understanding how prior beliefs influence judgment [22-25]. Biased assimilation occurs when prior commitments influence the standards used to evaluate new evidence [26]. Supportive findings tend to receive relatively uncritical acceptance, whereas equally credible contrary findings are examined for weaknesses. In the classic capital punishment study [26], proponents and opponents evaluated methodologically comparable studies differently according to which conclusion favored their existing position. Exposure to mixed evidence therefore increased polarization rather than moving the two groups toward agreement.

The same process appears to occur during clinical reasoning. Diagnostic decisions evolve as physicians sequentially integrate new clinical findings into an emerging diagnostic hypothesis. Ideally, each new piece of information should be evaluated according to its independent diagnostic value. Experimental evidence suggests, however, that once clinicians begin to favor one diagnosis, subsequent information may be interpreted in ways that support that hypothesis. Kostopoulou and colleagues [27] demonstrated that physicians systematically distorted the interpretation of sequentially presented clinical information in favor of their leading diagnosis. As confidence in the preferred diagnosis increased, subsequent findings were increasingly interpreted as supporting it, making diagnostic revision progressively less likely.

Such information distortion offers a cognitive mechanism through which an emerging diagnostic preference can be maintained despite findings that might otherwise prompt reconsideration of alternative explanations.

GENERAL DISCUSSION

Clinical decisions are not determined by evidence alone. They are also shaped by how alternatives are represented, how clinicians perceive their own objectivity, how they respond to peer input, how groups manage disagreement, and how new evidence is assimilated into an emerging diagnosis. Bringing these processes together provides a conceptual framework for understanding how alternative explanations and judgments receive consideration at multiple stages of clinical reasoning, from the initial framing of possibilities to the interpretation and collective evaluation of evidence. These processes may interact and recur: a differential diagnosis can be expanded during consultation, and a team can revisit both its initial assumptions and its interpretation of subsequent findings.

These findings also clarify why improving medical judgment and decision making requires more than expanding medical knowledge or increasing awareness of cognitive processes. Understanding these processes may

help clinicians recognize situations in which judgment is vulnerable to bias, but awareness alone does not necessarily alter the immediate judgment. Clinical practice therefore needs procedures that support reconsideration when it matters, alongside medical knowledge and statistical and methodological competence. This emphasis is consistent with Zloto and Afek's recent review in *IMAJ* [28], which highlights clinical judgment, communication, and teamwork as core elements of medical education.

Debiasing should focus on changing the conditions under which clinical judgments are formed, discussed, and reviewed. Relevant safeguards include explicitly considering plausible alternatives, unpacking differential diagnoses, evaluating evidence both for and against a favored diagnosis, and recording independent assessments before group discussion. Clinical teams should also create conditions in which disagreement can be expressed openly and examined without being inhibited by hierarchy or fear of criticism. These practices can be strengthened by decision procedures that expose individual judgments to independent scrutiny.

Considering alternatives does not require an exhaustive differential diagnosis, equal weighting of opinions with unequal evidential support, or indefinite postponement of action. The extent of reconsideration should reflect the clinical evidence, the consequences of error, and the time available. Such measures cannot eliminate human fallibility or intuitive thinking, but they can compensate for predictable limitations in clinical reasoning. Carefully designed changes in how uncertainty is represented, evidence is evaluated, disagreements are explored, and collaborative judgments are structured may improve diagnostic accuracy, communication, teamwork, and ultimately the quality and safety of patient care.

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References

1. Kahneman D, Slovic P, Tversky A, eds. Judgment under Uncertainty: Heuristics and Biases. Cambridge: Cambridge University Press, 1982.
2. Gilovich T, Griffin D, Kahneman D, eds. Heuristics and Biases: The Psychology of Intuitive Judgment. Cambridge: Cambridge University Press, 2002.
3. Kahneman D, Tversky A, eds. Choices, Values, and Frames. Cambridge: Cambridge University Press, 2000.
4. Mintz A, Riskin A. Cognitive biases and heuristics in medical decision-making: mechanisms, clinical manifestations, and debiasing strategies. *IMAJ* 2026; 28 (11): 690-700.
5. Fischhoff B, Slovic P, Lichtenstein S. Fault trees: sensitivity of estimated failure probabilities to problem representation. *J Exp Psychol Hum Percept Perform* 1978; 4 (2): 330-44.
6. Johnson EJ, Hershey J, Meszaros J, Kunreuther H. Framing, probability distortions, and insurance decisions. *J Risk Uncertain* 1993; 7 (1): 35-51.
7. Tversky A, Koehler DJ. Support theory: a nonextensional representation of subjective probability. *Psychol Rev* 1994; 101 (4): 547-67.
8. Redelmeier DA, Koehler DJ, Liberman V, Tversky A. Probability judgment in medicine: discounting unspecified possibilities. *Med Decis Making* 1995; 15 (3): 227-30.
9. Ross L, Ward A. Psychological barriers to dispute resolution. *Adv Exp Soc Psychol* 1995; 27: 255-304.
10. Ross L, Ward A. Naive realism in everyday life: implications for social conflict and misunderstanding. In Reed ES, Turiel E, Brown T, eds. Values and Knowledge. Mahwah, NJ: Lawrence Erlbaum, 1996: 103-35.
11. Ross L, Greene D, House P. The false consensus effect: an egocentric bias in social perception and attribution processes. *J Exp Soc Psychol* 1977; 13 (3): 279-301.
12. Pronin E, Gilovich T, Ross L. Objectivity in the eye of the beholder: divergent perceptions of bias in self versus others. *Psychol Rev* 2004; 111 (3): 781-99.
13. Marks G, Miller N. Ten years of research on the false-consensus effect: an empirical and theoretical review. *Psychol Bull* 1987; 102 (1): 72-90.
14. Surowiecki J. The Wisdom of Crowds. New York: Doubleday, 2004.
15. Larrick RP, Soll JB. Intuitions about combining opinions: misappreciation of the averaging principle. *Manage Sci* 2006; 52 (1): 111-27.
16. Soll JB, Larrick RP. Strategies for revising judgment: how (and how well) people use others' opinions. *J Exp Psychol Learn Mem Cogn* 2009; 35 (3): 780-805.
17. Liberman V, Minson JA, Bryan CJ, Ross L. Naïve realism and capturing the "wisdom of dyads". *J Exp Soc Psychol* 2012; 48 (2): 507-12.
18. Minson JA, Liberman V, Ross L. Two to tango: effects of collaboration and disagreement on dyadic judgment. *Pers Soc Psychol Bull* 2011; 37 (10): 1325-38.
19. Jacobson J, Dobbs-Marsh J, Liberman V, Minson JA. Predicting civil jury verdicts: how attorneys use (and misuse) a second opinion. *J Empir Leg Stud* 2011; 8 (Suppl 1): 99-119.
20. Lorenz J, Rauhut H, Schweitzer F, Helbing D. How social influence can undermine the wisdom of crowd effect. *Proc Natl Acad Sci U S A* 2011; 108 (22): 9020-5.
21. Riskin A, Mintz A. Group dynamics: groupthink and polythink, social and cognitive biases in medical team decision-making. *IMAJ* 2026; 28 (11): 741-6.
22. Ross L. The intuitive psychologist and his shortcomings: distortions in the attribution process. *Adv Exp Soc Psychol* 1977; 10: 173-220.
23. Einhorn HJ, Hogarth RM. Confidence in judgment: persistence of the illusion of validity. *Psychol Rev* 1978; 85 (5): 395-416.
24. Ross L, Lepper MR. The perseverance of beliefs: empirical and normative considerations. In Shweder RA, ed. Fallible Judgment in Behavioral Research. New Directions for Methodology of Social and Behavioral Science, no. 4. San Francisco: Jossey-Bass, 1980: 17-36.
25. Nisbett RE, Ross L. Human Inference: Strategies and Shortcomings of Social Judgment. Englewood Cliffs, NJ: Prentice-Hall, 1980.
26. Lord CG, Ross L, Lepper MR. Biased assimilation and attitude polarization: the effects of prior theories on subsequently considered evidence. *J Pers Soc Psychol* 1979; 37 (11): 2098-109.
27. Kostopoulou O, Russo JE, Keenan G, Delaney BC, Douiri A. Information distortion in physicians' diagnostic judgments. *Med Decis Making* 2012; 32 (6): 831-9.
28. Zloto O, Afek A. The physician of the future. *IMAJ* 2026; 28 (4): 265-9.