

Table 1. Selective Catalogue of Phenomena

Phenomenon/Effect	Description	Example
Insensitivity to Base Rates	Not fully using base rates (information about relative frequencies) in judging probabilities and making predictions	Thinking that a person has a high probability of having cancer after testing positive on an accurate, but not-perfect test, without taking into account the low incidence of cancer in the population.
Insufficiently Regressive Prediction	Prediction that neglects the fact that more extreme outcomes or performances tend to be followed by ones closer to the mean (i.e., closer to average)	Predicting that Sam's score the second time he takes the GREs will be in the top 1% since that's where his score was the first time
Insensitivity to Sample Size	Willingness to draw an inference about a population from a sample that is too small to support it	Judging that a hospital averaging 100 births a day and one averaging 15 a day will have about the same number of days where over 65% of the births are boys
Conjunction Fallacy	Taking a conjunction to be more probable than either of its conjuncts	Ex 1: It's more likely that Linda is a bank teller and a feminist than that she is a bank teller [a probability version] Ex 2: There are more six letter words ending in 'ing' than having 'n' as their fifth letter [a frequency version]
Gambler's Fallacy	Treating probabilistically independent events as though they were dependent	Bob and Ann have had 7 boys in a row so they are due for a girl
Hindsight Bias	Tendency to overestimate the likelihood that one would have predicted an outcome after learning it occurred	Monday morning quarterbacking, second guessing ("I knew it all along")
Overconfidence	Tendency to overestimate the probability that one's judgments or predictions are correct	Assigning high probabilities to hypotheses or claims that frequently turn out to be false
Suboptimal Integration of Information (Actuarial vs. Intuitive Prediction)	In many cases an actuarial model (often a simple linear regression equation with just a few predictor variables) provides more accurate predictions than experts	Expert diagnoses (e.g., in clinical psychology) or predictions (e.g., of sporting events) are often less accurate than predictions by a formula
Preference Reversals (and framing effects)	Logically equivalent, and often seemingly trivial changes in the way options are described lead to reversals of preferences	Preferring one option to a second when the two are described in terms of rate of employment but preferring the second to the first when they are given an equivalent description in terms of unemployment
Preference Reversals (and elicitation effects)	Seemingly equivalent methods for eliciting preferences lead to preference reversals	Selecting one of two options when asked to choose between them and the other option when asked to reject one of them
Four-Fold Pattern of Risk Seeking and Aversion	Being risk-averse with respect to gains and risk seeking with respect to losses when probabilities are moderate to high, and the reverse when probabilities are low	Preferring a sure gain of \$500 to a 50% chance of winning \$1000 but a 50% chance of losing \$1000 to a sure loss of \$500
Subadditive Probabilities	Judged probability of a disjunction can be less than the sum of the judged probabilities of its disjuncts	Judging that the probability of death in an accident is less than the sum of the judged probability of death in an auto accident and the judged probability of death in some other sort of accident
Fundamental Attribution Error	Tendency to overestimate the role of other peoples' dispositions and traits, and to underestimate the importance of the context, in explaining their behavior	Thinking that people in a crowd who don't help an injured person are unusually uncaring, when in fact many people in such situations are reluctant to help

Table 2. Selective Catalogue of Mechanisms and Normative Analyses

Phenomenon/Effect	Some Proposed Mechanisms	Normative Status
Insensitivity to Base Rates	Representativeness	If base rates are equated with prior probabilities, then failure to use them when estimating relevant conditional probabilities violates Bayes' theorem
Insufficiently Regressive Prediction	Representativeness	If certain common assumptions are satisfied, an item sampled from a distribution after an extreme one is sampled will usually fall closer to the population mean
Insensitivity to Sample Size	Representativeness	Larger samples are more likely to reflect the features of their parent population than smaller samples are
Conjunction Fallacy	Representativeness; availability (for example 2, involving frequencies, in Table 1); failure to unpack a relevant explicit disjunction (support theory)	In standard probability theory (and its nonstandard variants) a conjunction can never be more probable than its conjuncts
Gambler's Fallacy	Representativeness	Independent events should be treated as independent
Hindsight Bias	Anchoring on current belief and not adjusting enough when estimating the likelihood that we would have predicted it	This is a case of inaccurate assessment of probabilities
Overconfidence	People focus on strength (e.g. extremeness) of evidence and tend to neglect its weight (credibility)	Judges should be well calibrated, i.e., when they judge the probability to be .X they should be right X% of the time
Suboptimal Integration of Information (Actuarial vs. Intuitive Prediction)	Many of the effects mentioned here, e.g., failure to attend to base rates, as well as unclarity about the best predictor variables, the weights they should be given, and consistency in applying them	In cases where the predictions can be assessed for accuracy the model in fact makes a higher proportion of correct predictions than the person
Preference Reversals (and framing effects)	People edit or code situations (e.g., as gains or losses) and this affects how they subsequently think about them	Preferences should not depend on differences between logically equivalent ways of describing the very same options
Preference Reversals (and elicitation effects)	People's preferences tend to be compatible with the format in which they are elicited	Preferences should not depend on trivial differences between ways of eliciting them
Four-Fold Pattern of Risk Seeking and Aversion	Diminishing sensitivity (impact of a given change diminishes with distance from a reference point) for values and for weighted probabilities	In standard utility theory risk aversion follows a concave utility function
Subadditive Probabilities	Availability (for implicit disjunctions); anchoring and adjustment and repacking (for explicit) disjunctions	Standard probabilities are additive (the probability of a disjunction of mutually exclusive disjuncts equals the sum of their individual probabilities)
Fundamental Attribution Error	Increased salience of the actor in the observer's perceptual field; some dual-process models in which we don't discount enough for the power of the situation	It is difficult to assess the accuracy of many of our explanations of behavior, but much evidence shows that situations account for more of the variance in behavior than we typically suppose