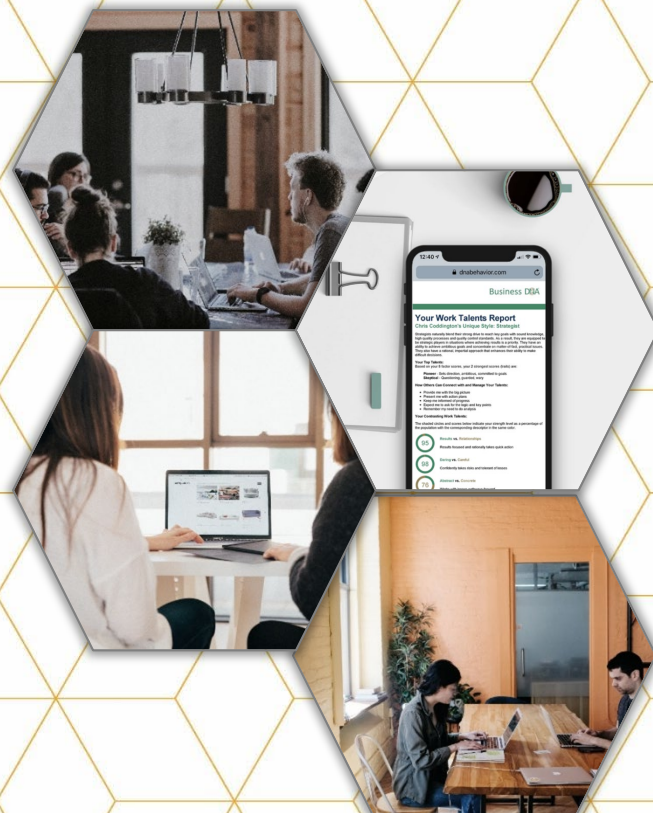


# The Sources of Behavioral Variability



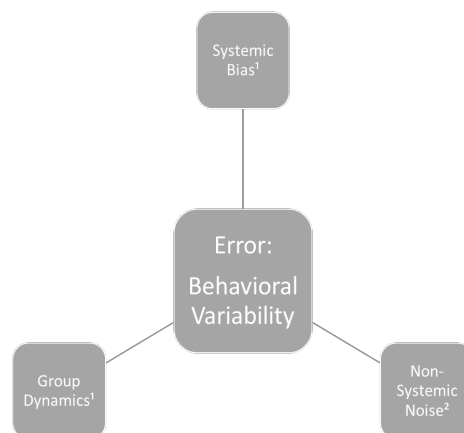
## The Sources of Behavioral Variability

### What is Judgment?

1. Judgment is about decisions made by professionals or experts (referred to as "judges") who are competent and reasonable where their human mind is the instrument, and a judgment call is required to be made. Hence, as a natural consequence, their intuition is generally exercised to some degree in making judgments.
2. The Behavioral Variability then arises because the so-called judges exhibit a high level of disagreement in separate judgments of the same cases with the same information and data available. It would be expected there to be identical decisions.
3. The judges will inherently bring a different mental approach in making their decisions because they are each different. The variance in judgments occur:
  - a) Within a person (i.e., the same person makes different judgments of the same thing at different times), and
  - b) Between different persons who are making judgments on similar matters.
4. A problem of judgments is they are mostly not verifiable (not comparable against a known outcome). So, the real answer may never be known. Nevertheless, as shown in the Behavioral Variability in judgments (error) can be measured with an accepted mathematical formula and identified as being caused by systemic Bias and/or random Noise.

Inherently, judgment implies error because two different conclusions for the same matter with the same information and data available cannot be right. The goal is then to measure the errors reflecting Bias and Noise, and ultimately

### Sources of Behavioral Variability Causing Error in Decisions



1. DNA Behavior International 2001-2021  
2. Noise – Daniel Kahneman et al, 2020

## What is Bias?

1. "Bias" exists when most errors in a set of judgments are systemic and consistently in the same direction (the error will reliably show up). For example, an executive always overestimates sales forecasts year after year.
2. The consistency of the Bias can also provide a causal explanation. However, Bias does not constitute all of an individual's judgment errors. The error that remains when Bias is removed is "Noise."

Bias exists when errors in a set of judgments are consistently in the same direction.

## The Biases of Your Employees & Clients

### How Do They Make Decisions? Do You Treat Them All The Same?



#### Take Charge Opportunities

A person who is take charge is focused on goals and opportunities to expand their world.

Over Optimism Bias  
Over Confidence Bias



#### Outgoing Engagement

A person who is outgoing desires engagement, openness and making connections.

Instinctive Bias  
Herd Follower Bias



#### Patient Security

A person who is patient is interested in stability, safety and living with security.

Loss Aversion Bias  
Risk Aversion Bias



#### Planned Analysis

A person who is planned has a need for data and likes to analyze and focus on the tangible.

Anchoring Bias  
Pattern Bias

## What is Noise?

1. Noise is the unwanted Variability (divergence) of human judgments of the same problem, leading to inaccurate and unfair decisions. It is around people all the time, though individuals fail to notice it. Generally, measuring Noise is about studying recurrent decisions and not a singular decision. Although, singular decisions are not free from the factors that cause Noise.

With Noise, there is no obvious bias as the judgments are randomly scattered and not consistent.

2. With Noise, there is no apparent bias as the judgments are randomly scattered and not consistent. There is not a direct causal explanation (or the explanation is more speculative).
3. In some cases, the same expert will give a different opinion of the same case facts on back-to-back days.
4. From a DNA Behavior perspective, the Bias is capable of 91% prediction. However, we believe that some of the elements that may give rise to Noise for people come from their Bias. That is what gives rise to Noise for one person versus another can be identified and understood through the lens of understanding their Bias.
5. Taking this further, if a group of judges (decision-makers) each share similar Biases (e.g., because their DNA Natural Behavior style is Initiator who are pioneers or risk takers), their collective decision-making pattern may systemically cause the same error. However, when the decision-makers have different styles the behavioral Biases that show up will be different leading to more scattered results, hence Noise. Nevertheless, the patterns exhibited can be explained through Biases. Of course, at DNA Behavior we seek to identify the difference between natural hard-wired behaviors that exist for a life-time (Bias) and those which are situational (causing even more Noise).
6. For instance, when people are presented with the same problem in their work and are asked to estimate a number or indicate what they think will happen. Then you look at the Variability in the responses. If the assessments are variable, then the errors are variable. Ultimately, this makes it essential to measure both the systematic Bias and random Noise which is at play.

## The Problem of Noise

1. Noise is not a problem where diversity of opinion is required. Although, the different people providing diverse opinions, hence judgments, need to be understood, accepted and respected for their differences.
2. However, Noise is a problem where people of similar skills make regular judgment calls in similar situations.
3. This plays into why there should be a digital decision-making "twin" or clone so that judges can test their intuition against the benchmark of an expert panel or the decision-makers best decisions. The deployment of digital twins to supplement the DNA Behavioral Discovery Process is the next frontier.
4. Employee selection is an example of where Biases and Noise show up because the recruiters will all have differences. However, the recruiter could use a digital twin to check how their intuition about a candidate compares against what an expert panel would decide. This type of process using a digital twin can be used in determining an investor's risk profile

Noise is a problem where people of similar skills make regular judgment calls in similar situations. This becomes detrimental in situations where similarly situated people get treated differently resulting in organizations losing credibility.

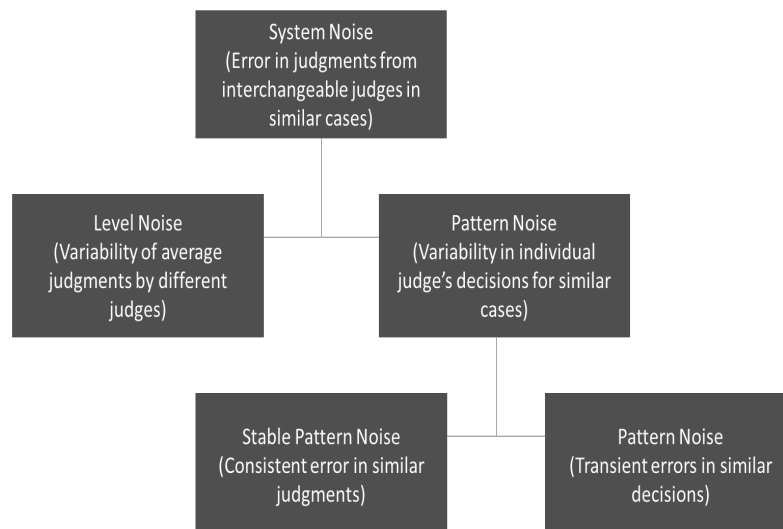
and portfolio allocation, choosing the ideal client, assessing whether a person is fit for leadership, valuing companies and other areas where subjectivity is at work in making decisions.

5. Also, it is problematic that leaders know there is a level of Behavioral Variability, but they also choose not to confront it as the ensuing disagreement will cause conflict.
6. Noise is detrimental, whichever way you look at it. Similarly, situated people should not be treated differently, and a system that relies on professional judgments loses credibility. Customers do not expect Noise and would be shocked to know they are possibly paying too much for a service or part of a "lottery" they do not expect.
  - a) In wealth management, this type of situation occurs when clients in similar situations are given very different portfolios. This could lead them to failing to achieve their goals because not enough risk was taken or losing a substantial amount of money because too much risk is taken.
  - b) Or, in health care where a patient gets three different diagnoses for the same problem and after two years of pain and various treatments, the fourth doctor finally performs the proper investigation and solves the problem.

## Types of Noise

1. In summary, the framework for breaking down Noise is as follows:
  - a) Error divides into Bias and System Noise.
  - b) System noise divides into Level Noise and Pattern Noise.
  - c) Pattern noise divides into Stable Pattern Noise and Occasion Noise.

## The Noise Framework<sup>2</sup>



2. Noise – Daniel Kahneman et al, 2020

2. "System Noise" refers to the error in judgments when an organization uses interchangeable professionals (in the same field) to make decisions about similar matters. The perception is the professionals are expected to agree on the conclusion because there are set laws, protocols, policies and guidelines and even precedents, but they do not. System Noise can be broken down into: Level Noise<sup>2</sup>+ Pattern Noise<sup>2</sup>.
  - a) Level Noise - the Variability of the average judgments made by different individual judges (or experts) – for instance, caused by the ambiguity of judgment scales (e.g., 1 to 7), which mean different things to different people. In this case, you are looking at the average judgments across all the panels of judges. As a result, different judgments are made between levels of severity or generosity.
  - b) Pattern Noise – is the Variability in individual judges' (experts) responses to similar cases because they place different weight on certain data elements, see different things or emphasize different factors in making a decision. The same judge (expert) is not always as soft or severe in making judgments or evaluations on similar matters. The Variability reflects the different principles or values that the individuals follow, whether consciously or not. As a result, our personal experiences produce a ranking effect and influence judgment in terms of unequal priority.
    - i. Stable Pattern Noise – takes pattern noise one step further. In some situations, the expert will always make a harsher or softer assessment based on their personal belief system – the Variability tends to be unique to their personality and situational experiences.
    - ii. Occasion Noise – this is the transient component of pattern noise exhibited when a different decision is made for the same facts on different days. This will happen when the expert is making assessments in situations they have not seen before. It will be inherently more random and reflects changes in opinion without reason. Occasion Noise is generally less than Stable Pattern Noise.
3. Occasion noise while a form of pattern noise, it warrants its own discussion.
  - a) Occasion noise can come from many factors – both physical and mental.
  - b) If a person is asked the same question twice the first answer will be the most accurate and the best estimate comes from averaging them both. – this is called the "crowd within".
  - c) Mood is a source of occasion noise as it changes how you think – if the mood is good, the judgment will be positive.
  - d) When the mood is good, people better recall information, respond better to the environment, and have a better sense of internal signals.
  - e) Coming into negotiations, a good mood helps as it will elicit better responses. However, research shows that positive results can be obtained if the negotiator switches to a bad mood when their counterpart is being stubborn.

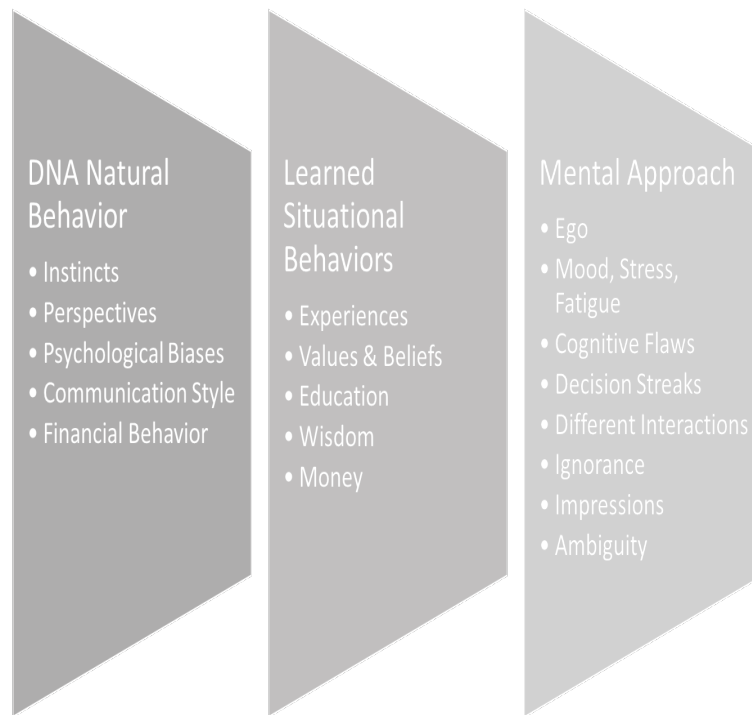
- f) But the problem with a good mood is people let their first impressions take over and do not challenge them. So, they are more likely to let their biases impact their thinking. Another way of stating this is people in good moods are more receptive to "BS" and are susceptible and less apt to detect deception or identify misleading information.
- g) Along with mood, stress and fatigue will impact judgments (tends to make Natural Behavior operate more strongly).
- h) The weather can modify the mood.
- i) Random Variability is impacted by the order in which cases are reviewed – the cases and decisions in previous decisions frame future decisions. When a streak of decisions has gone in one direction, the person may reverse it for another decision. This is called the gambler's fallacy – being we underestimate that winning streaks can occur by chance.
- j) Overall, the Variability in the functioning of the brain impacts judgments. This is normal as no one is perfect.

A good mood can be positive for decision-making, but the trap is that it can let positive impressions take-over and not be challenged. However, stress and fatigue will negatively affect judgments.

## The Psychology of Judgment Causing Behavioral Variability

1. Intuition is only 28% accurate which is largely caused by an objective ignorance of the facts. Therefore, it is clear people often do not have enough information to make a decision when they do. The objective ignorance is greater the longer people look into the future to make forecasts.
2. Further, not managing intuition causes an unacceptable level of over-confidence and people get an emotional rush from exercising it. So, ego becomes a barrier to checking the intuition with data and more information, or even allowing some reflective time.
3. The mental approach of judgment leading to variable responses is caused by:
  - a) Different perspectives caused by individual behavioral differences which are present to different degrees.
  - b) Psychological biases (otherwise known as heuristics coming from mental shortcuts) are a source of systematic error or statistical Bias (when predictable from measuring natural behavior). They can be a source of random Noise (when coming from learned behavior), which is inherently less predictable. The DNA Natural Behavior Discovery measures 16 behavioral biases, although some of them are more prevalent than others in individual and group decision-making.
  - c) Communication styles impacting how information is received and conveyed by different people. Every person focuses on different aspects of the same problem or situation

## Psychological Forces Impacting Judgment Calls



- d) Overall, there are three types of biases that produce statistical Bias or otherwise cause Noise:
- Substitution biases lead to a mis-weighting of the evidence. In answering a hard question, people will substitute an easier question, which causes predictable errors.
  - Conclusion biases lead people to bypass the evidence or consider it distortedly to fit their needs, e.g., desirability bias.
  - Excessive coherence magnifies the effect of initial impressions and reduces the impact of contradictory information. The principle being people jump to conclusions and then stick to them, even if there is contradictory evidence.
  - People bring different personal baggage, experiences, wisdom and successes to the confidence of making judgments. There is both natural and learned behavior involved, which impacts a decision.



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- e) Behaviors, and therefore decisions, are a function of personality (natural and learned) and situations. People will react differently to the features and combinations they find in each case with their different personalities. Further, even people with similar personalities can react differently to the same situation because of a life experience, baggage, values or education.
  - f) Different interactions – how teacher's interface with students, judges with a jury, lawyers and defendants etc.
  - g) Then, a lack of personal awareness by the judge of the impact of their behavioral style and then ability to manage their behavior (Low emotional intelligence).
  - h) Similarly, in groups, a lack of emotional intelligence of the leader and capability of the group facilitator (if there is one) to see and manage the different behaviors.
  - i) Selective recall (what we sometimes call "Selective Amnesia") and selective attention.
  - j) The conversion of overall impressions to a probability.
  - k) The cognitive flaws of the expert causing a lack of capability for deciding on different dimensions of a case.
  - l) People's overconfidence in their predictive judgment underestimates their objective ignorance and biases – that is, objective ignorance is a big player in judgment error.
  - m) When a decision requires the weighting of multiple, conflicting cues. For instance, in hiring some interviewers will weigh the appearance of brilliance or charisma higher than diligence or calmness under pressure in hiring. When cues are inconsistent, people will give more weight to certain cues and ignore others.
  - n) Lack of a structured or formal approach to decision-making can be behaviorally driven, particularly for people with stronger spontaneous traits.
4. The ambiguity in the wording of rating scales causes Noise because the judges interpret the rating scale differently. This is also why DNA Behavior uses singular words in the Natural Behavior Discovery measurement because many Bias are naturally removed with clear and fewer words.
- a) People are more sensitive to the relative value of comparable goods than to their absolute value.
  - b) Anchoring is important given the first answer using the scale guides the next answers, thereby providing some consistency.

Given many decisions are a function of personality there will be some predictability although it is possible that people with similar personalities may react differently because of life experiences, values or their education. Also, different interactions can cause Noise in decisions.

People are more sensitive to the relative value of comparable goods than to their absolute value.

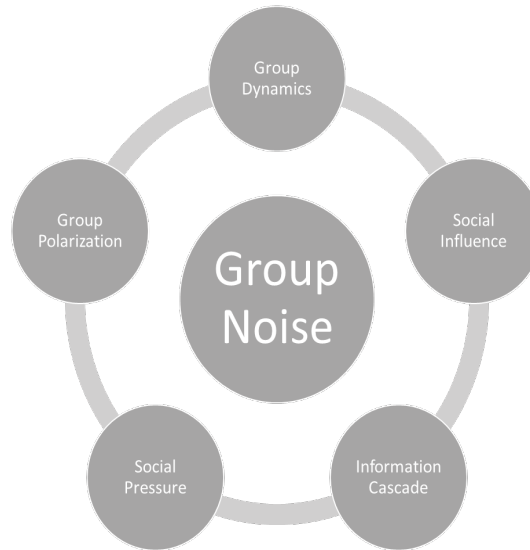
- c) The best results come when answers/judgments can be ranked in order of importance.

## Group Amplification

1. Groups have an overarching impact on Biases and Noise (that incorporates both Level and Pattern Noise).
2. Group dynamics can potentially generate very different outcomes and decision making even from minor, or even irrelevant, differences, among members.
3. The following four biases which the DNA Natural Behavior Discovery Process measures will be prevalent in group decision-making:
  - a) Authority bias – reflecting the influential voice who speaks up and seeks to influence the room.
  - b) Group Think Bias – are the naturally collaborative people who will be inclined to group deliberation.
  - c) Conformist Bias – are those that will follow the direction of the room and avoid conflict by not sharing their views.
  - d) Anchoring bias – will operate from their experiences and can be more stubborn to sway their decisions toward a new path.
4. Group noise can be problematic when the group follows one individual. So, the group dynamics are important to the outcome:
  - a) Who speaks first
  - b) Who speaks last
  - c) Who speaks with confidence
  - d) Who is wearing black
  - e) Who sits next to whom
  - f) Body language at key moments
5. A driving force on group decisions is social influence.
  - a) The early popularity of who speaks first counts and can create Anchoring in the group. When groups move in the direction of some products, people, movements, trends etc it is often because of the early votes of support – people listen to who speaks first (which can be the wrong person).
  - b) The social influence on groups is a problem because they reduce "group diversity" without diminishing the collective error. Social influence produces herding that undermines the wisdom of crowds.

Anchoring can be important in groups given the first person will create an impression that others will try to make sense of and may later ignore contradictory information.

## Factors Causing Group Noise Amplification



6. Noise reduction requires independence in thinking when making a decision. The Wisdom of Crowd effect of averaging many judgments generally improves accuracy only if the decisions are made independently. Also, the crowd will not be influential if the problem has a degree of complexity for which the group is not competent to decide on.
7. Information cascades are important to the level of Noise – the information or insights presented first may influence the others and hence those speaking last may as well be private – their view will not change the room. This captures that people will follow a stronger early view because they are unsure, have no view, or are not passionate either way. People learn from others which might cause others to assent. We have seen this in facilitating many team and family group meetings where the more reserved and patient people keep quiet because they do not want to endure the conflict or have to present.
8. Social pressures are also important. People silence themselves so as not to appear uncongenial, truculent, obtuse or stupid. They want to be team players and not disagree or look silly. People can exaggerate the conviction of those that speak before them and provided an endorsement. Unfortunately, it can lead to the wrong result.
9. Group polarization occurs when people speak with one another they end up at a more extreme point in line with their original inclinations. What can be a good idea is then more enthusiastically expressed as a great idea and embraced.
10. The principle is that the Noise present in the independent, individual judgments is always reduced by averaging them. Deliberation in groups increases Noise.

Group deliberation always increases Noise. So, Noise reduction requires independence in thinking and for there not to be reliance on what others think. Otherwise, the group could move towards who speaks first.

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To learn more about DNA Behavior International and the solutions we offer, please visit:

[www.dnabehavior.com](http://www.dnabehavior.com)

If you have any questions or would like to discuss with an executive on our team, please email us at:

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