



June 2015

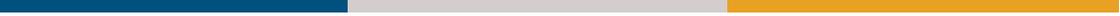
Intelligence, the Human Factor and Cognitive Biases

Gnothi seauton

By Axel Dyèvre

strategic notes

Intelligence
in decision-making



Les notes stratégiques

Policy Papers – Research Papers

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Foreword

This Strategic Note originates from the work conducted in the FP7 RECOBIA project as well as an article published in the January 2015 issue of the French magazine “Revue Défense Nationale”.

CEIS coordinated the RECOBIA (Reduction of Cognitive Biases in Intelligence Analysis) research project from 2012 to 2015. This project was co-funded by the European Union through the 7th Framework Programme (grant agreement n° FP7-SEC-2011-285010).

The CEIS team worked closely with Dr Alain Bertone. Dr Bertone has a PhD in experimental psychology and has co-authored the book “Témoin sous influence: recherche de psychologie sociale et cognitive” (1995, PUG).

The other consortium partners of the project were: the EUROSINT Forum (BE), The Commissariat à l’Energie Atomique et aux Energies alternatives (FR), Hawk Associates (UK), Thales (FR), Atos (ES), Zanasi & Partners (IT), The University of Konstanz (DE), and Graz University of Technology (AT).

In order to take into account operational realities and requirements, 6 two-days workshops were organised throughout the three-year duration of the project. These workshops attracted more than 102 representatives of 21 intelligence agencies from 11 EU Member States and 4 European agencies.

Original version in French - June 2015

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Intelligence: a cognitive activity

In an article published in the January 2014 issue of the French paper "Revue de la Défense Nationale", Bernard Bajolet, the General Director for External Security, underlined the crucial role of intelligence. The French White Paper of 2008 had already highlighted that "*Intelligence is a prerequisite for decision-making in order to anticipate and assess international risks, crises, and conflicts*". Throughout his article, Bernard Bajolet also emphasised the central role played by Intelligence Officers – the human factor - in what he called "*the reduction of uncertainty*".

For the purpose of this note, **the term “Intelligence Officer” encompasses various positions such as case officer, operator, analyst and so on.** Intelligence Officers are at the core of intelligence work. Data collection is not the end goal but rather the starting point of intelligence. Thus, data collection is the beginning of the cognitive work, in that raw data has to be interpreted, analysed and its hidden meaning deciphered.

Moreover, the missions of intelligence services are centered on understanding of human activities. Their objective is to anticipate and cope with threats stemming from non-state organisations, such as armed or terrorist groups, from other states, via their intelligence services or their armed forces, or from lone individuals. This triple mission is often conducted in a context of uncertainty and in relying on incomplete information, which requires extrapolation in order to discern the intentions of the targets. By definition, these targets try to conceal their activities and actual intentions. In addition to this, Intelligence Officers often conduct their missions

in a stressful environment and with a sentiment of urgency. All of these factors have an impact on the way data will be managed and interpreted.

Intelligence work is conducted by trained and experienced human beings. Cognitively speaking, they are nonetheless operating in the same manner as any other human being, who also lives in an uncertain environment.

Regardless of his position in the organisation, the role of an Intelligence Officer cannot be reduced to a mechanical activity of data acquisition or data processing, which would result in providing him with a technical solution to a particular problem. Intelligence is indeed primarily a "cognitive" activity, namely an activity calling upon "all the mental processes related to knowledge such as perception, memory, reasoning, problem solving"¹.

This omnipresence of human activities in the different functions and steps of intelligence work has led the European Union to propose a specific topic in the framework of the European FP7 Security Research Programme (2010). This topic was entitled **"Reducing the negative impact of cognitive biases in intelligence analysis"**. In order to address this issue the three-year RECOBIA project was launched in 2012, with a consortium consisting of eight companies and research centres, led by CEIS (www.recobia.eu).

The objective of the project was to improve the quality of intelligence production by reducing the negative impact of cognitive biases on the work of Intelligence Officers. Although this topic is explored in depth for the first time in Europe, it is not totally unknown to US intelligence. In 1999, a CIA analyst, Richard Heuer, addressed the subject in *'The Psychology of Intelligence Analysis'*, which remains a reference in this field. More recently, the CIA published a manual in 2009 titled *'Tradecraft Primer:*

¹ <http://www.psychomedia.qc.ca/lexique/definition/cognition>

*Structured Analytic Techniques for Improving Intelligence Analysis*² whose objective is to offer solutions to mitigate the effect of cognitive biases on intelligence analysis. British Military Intelligence also has its own (non-public) manual on the subject: '*Quick wins for busy Analysts*'.



² <https://www.cia.gov/library/center-for-the-study-of-intelligence/csi-publications/books-and-monographs/Tradecraft%20Primer-apr09.pdf>

Cognitive biases are involuntary, automatic and systematic

A cognitive bias is the result of the use of fast, intuitive and simplified mental operations - also called heuristics - that the human brain does not perceive as such, as it is convinced to have followed a logical and rational thinking process. In other words, cognitive biases are the result of "a deviation in judgement".

Cognitive biases are involuntary, automatic and systematic psychological mechanisms that affect us all without exception.

Cognitive biases are beyond the control of anyone. They originate from the depths of human nature and unconsciously distort the way in which we perceive the world and our own actions. For example, the 'halo effect' is a "cognitive bias in which an observer's overall impression of a person, company, brand, or product influences the observer's feelings and thoughts about that entity's character or properties". Thus, the age of a person influences the perceived seriousness of his/her remarks. An expert in a specific field will be attributed – involuntarily – a degree of credibility on other issues unrelated to his field of expertise. In the intelligence field, this effect has been identified throughout the RECOBIA project as presenting a particular risk in the recruitment and exploitation of sources. It can unconsciously 'contaminate' the perception of the intelligence officer and thus affect its evaluation and this in spite of quality control and source ratings mechanisms in place.

All that said, the term 'cognitive bias' carries ambiguity. Cognitive biases are indeed generally erroneously assimilated to the common notion of 'bias', that is the

*“inclination of temperament or outlook to present or hold a partial perspective, often accompanied by a refusal to consider the possible merits of alternative points of view”*³. The example of the ‘halo effect’ is illustrative: it does not occur as a result of incompetence, bad faith or lack of experience. This is a completely unconscious and automatic psychological mechanism, which is affecting everyone in the same manner regardless of the level of experience, opinions, origins and gender. In this regards, as any other human being, Intelligence Officers are also affected by cognitive biases. The good news is that, although the occurrence of cognitive biases cannot be prevented, their negative effects can be mitigated.

Due to their potential negative impacts, cognitive biases are often confused with mistakes. The definition of cognitive biases is nonetheless more complex. They emerge when the human brain is faced with situations in which it has to achieve a specific result, such as choosing one piece of information (the goal) in a given context, with several different pieces of information being available (the situation).

Intelligence activities imply numerous cognitive tasks. For instance, the tasks of ‘knowing’, ‘understanding’, ‘evaluating’, ‘deciding’ all are cognitive actions. The cognitive actions are based upon contextual and situational elements (such as memory, information, sources, etc.) and are ‘elementary acts’ in the ‘military sense’ that any intelligence officer performs regardless of his role, function, specialty or expertise.

Performing such activities will most likely trigger cognitive biases. Although it might be difficult to admit, expertise and experience are not a protection against cognitive biases. All the same, being aware of the existence of cognitive biases and understanding their effects do not prevent them either from occurring. Indeed, they systematically occur at the conjunction of a given cognitive goal and a given cognitive situation.

³ Wikipedia

Hence, it is essential to understand that a cognitive bias automatically occurs each time the human brain is trying to achieve a given cognitive goal in a given cognitive situation. Under these conditions the human brain unconsciously turns to an 'automatic mode'. Another key aspect is to actually accept it. Unfortunately, cognitive biases do not only affect others, namely younger or less experienced/trained /educated individuals or persons stemming from other services or organisations. All human beings are equally subjected to cognitive biases.

The cognitive bias known as the 'anchoring bias' can provide an excellent illustrative example. The 'quantitative' anchoring refers to a numerical value that will serve as a reference in our brain to address an issue in an uncertain environment. A simple test of asking someone to guess the length of the Dnieper River will demonstrate the occurrence of this cognitive bias. In case the question is phrased in the following manner: "*The Dnieper River is less than 5,000km, what is the length of the Dnieper?*" the person trying to address this question will tend to make an estimation starting from this numerical reference in order to try to provide a sensible answer. The answer provided will most probably be relatively close to 5,000km – provided the interrogated person does not know the actual answer before the question is asked. The figure given will in any case be superior to the one provided to a question phrased in this manner: "*The Dnieper River is more than 500 km, what is the length of the Dnieper?*".

A variant of this cognitive bias is called 'qualitative' anchoring. In this case it is not a numerical data that serves as a reference but rather the semantic content of the statement. The semantic content tends to distort the estimation made by the individual. In 1974, at the request of the American police, two psychologists, Loftus and Palmer, conducted a study to understand to which extent the wording/framing of a question can influence eye-witness accounts. The objective behind the study was to determine whether police officers questioning witnesses could unconsciously influence their statements. The experience consisted in playing a video of an

accident involving multiple cars in front of different ‘test groups’. The same video was presented to all the test groups and all groups were asked a similar question – the only variation being the verb used to describe the accident: *“How fast were the cars going when they: made contact/ hit / bumped/ collided / smashed”*.

Systematically, the answers provided demonstrated that the perception of the subjects was influenced by the vocabulary used in the question. For example, the average answer of test group asked *“how fast were the cars when they made contact”* was 31.8 miles per hour (mph). By comparison, the test groups asked the question containing the verb *“smashing”* answered with an average of 40.8 mph. This experience has demonstrated to which extent the framing of a question affects our perception of a situation and leads to gaps in the interpretation of the question. Comparable situations pertaining to intelligence work come easily to mind, in particular in the initial steps of the analysis.



The KITs: “elementary acts” performed by Intelligence Officers

Cognitive biases are the result of the conjunction of a cognitive situation and a cognitive goal. It was thus essential to identify these cognitive situations and cognitive goals and the ways in which they appear in key intelligence activities. In order to do so, the consortium worked closely with European intelligence professionals in order to clarify this issue and to draw lessons learned. This was a critical stage in the project, which helped to overcome the somewhat rigid framework of the ‘intelligence cycle’. Indeed, the intelligence cycle has been taught, criticised, and over-analysed. While it remains essential and a basic element of intelligence tradecraft, the work conducted in the project offers an analysis grid that reflects more accurately the daily work of Intelligence Officers.

Long and iterative research work and analysis led to the identification and segmentation of the cognitive activities of Intelligence Officers. The research and findings were presented to intelligence professionals. These intelligence professionals all had different profiles. They represented more than 20 intelligence services from European Member States. This methodology was intended to avoid working without taking into account the realities of Intelligence Officers and to produce results that are both useful and adapted to the cultural and operational backgrounds of European intelligence services.

This segmentation led to the identification of seven "KITs" or "Key Intelligence Tasks" which are elementary acts performed by any Intelligence Officers. These KITs are at the core of the cognitive goals of Intelligence Officers; that is regardless of their position or role, or if they work in an office or in the field. These seven stages are not linear. The definition of these seven Key Intelligence Tasks was validated during six two-days seminars with intelligence professionals.

The version of the KITs presented in the table below is a synthesis of the work conducted.

KIT 1 – Interpreting the request (NFI - Need for Information)

Regardless of the mission led by an Intelligence Officer (continuous monitoring or ad hoc research and analysis), a need for information is expressed. It can be expressed directly or indirectly, in an interrogative form or in a statement to conduct a mission or as an order. In all cases, the Intelligence Officer will begin by having to understand the intent of the person posing the question, which is not necessarily formulated in an interrogative manner. This stage is called by convention ‘need for intelligence / information’ to cover the various possible cases of formulation applications.

KIT 2 – Allocating resources and planning

Even in the case the Intelligence Officer performs his assigned mission alone, he still has to assess the time and resources needed to carry out his mission. This allocation is made in a constrained environment: procedures to follow, deadlines to meet, and resources at his disposal.

KIT 3 – Selecting and assessing sources

Sources are a crucial element at the very core of the Intelligence process. These sources can be either “human” or either “documentary”. But even in the case of a documentary information- such as a press article or a classified report – there is an author who is the “real source”. The Intelligence Officer will select and exploit the sources according to three criteria: existence (and knowledge of their existence), availability and credibility of the source.

KIT 4 – Selecting and interpreting information

Drawing from these sources, the Intelligence Officer will collate information. These will be categorized and prioritized. To do so, relevance, interest and veracity of sources will be taken into account.

KIT 5 – Building hypotheses and scenarios, drawing conclusions

The objective of the Intelligence Officer is to provide answers to the 'need for intelligence/information'. This will lead to a task of synthesising and analysing the information in order to put into perspective the collected data by building hypotheses and/or scenarios and drawing conclusions.

KIT 6 – Preparing a report, delivering conclusions

The customer is the recipient of these results. They must provide an answer to the need for information. Most of the time these results follow a hierarchical chain and they can be presented in an oral presentation or briefing. Generally, a written report is also included, sometimes redacted for wider circulation. The objective is to focus on key points.

KIT 7 – Ascertaining findings

On the Intelligence Officer's initiative or that of his superiors or of the customer, the Intelligence Officer may need to check his information, conclusions and hypotheses. During this phase, he will have to re-evaluate the credibility of his sources and the validity of his information. He may also need to look for and take into account new elements.

KITs and cognitive biases

By combining these specific tasks with the specific situations, the psychologists of the RECOBIA consortium identified 29 cognitive biases that are particularly likely to affect Intelligence Officers. These cognitive biases were selected among the 288 cognitive biases already known and documented in the specialised literature. Then, the consortium engaged in a long process of defining and illustrating (thanks to a scenario⁴) each KIT through the definition of specific situations. The objective was to allow non-psychologists to better understand the nature, the circumstances and the consequences of each KIT.

The tables in the following pages detail the cognitive biases identified for each KIT and specify the cognitive context in which these biases are likely to occur.



⁴ The scenario and the specific situations developed in RECOBIA to illustrate these 29 cognitive biases are not presented in this note.

KIT 1 – Interpreting the request (NFI - Need for Information)

Availability Bias

Definition: The tendency to make judgements about the probability of events by how easy it is to think about recent examples in mind. The way for the brain to face an infinity of possibilities by applying a shortcut, based on the most easily available information in memory.

Cognitive task (goal): Evaluation of frequency/probability of occurrence of an event.

Cognitive context (situation): In a list of X events/ situations, for X reasons, one is more easily memorable than others.

Cognitive effect: Probability or frequency judgement is over influenced by the ease with which an event can be remembered.

Framing Effect

Definition: Tendency to interpret– and to react to - differently to a specific piece of information depending on whether it is presented as a loss or as a gain (a risk or an opportunity).

Cognitive task (goal): To make a judgement / an estimation.

Cognitive context (situation): A positive or a negative frame is presented in the question.

Cognitive effect: People tend to avoid risk when a positive frame is presented but to seek risk when a negative frame is presented.

KIT 1 – Interpreting the request (NFI - Need for Information)

Anchoring - Quantitative

Definition: The tendency to rely too heavily, or anchor, on a past numerical reference or one numerical trait or piece of information when making decisions (also called 'insufficient adjustment').

Cognitive task (goal): To make a judgement / an estimation.

Cognitive context (situation): a quantitative reference point or a first approximation is implicitly suggested by the situation.

Cognitive effect: Assimilation of the judgment to the first approximation by incremental adjustments from the first reference point.

Anchoring - Qualitative

Definition: Tendency to rely too heavily, or anchor, on a past reference or one trait or piece of information when making decisions (also called 'insufficient adjustment').

Cognitive task (goal): To make a judgement / an estimation.

Cognitive context (situation): A quantitative reference point or a first approximation is implicitly suggested by a formulation (words suggesting quantity/intensity).

Cognitive effect: Assimilation of the judgement to the first approximation by incremental adjustments from the first reference point.

KIT 2 – Allocating resources and planning

Planning Fallacy Bias

Definition: The tendency to underestimate task completion times and the tendency to underestimate the duration of the project activities.
The assessment of the time necessary to complete the entire task is different – and generally lower- from the assessment of the time necessary to complete each sub-task.

Cognitive task (goal): To make a judgement / an estimation.

Cognitive context (situation): The cognitive material on which judgment or evaluation is made (one's own tasks as they are imagined and/or remembered from past similar situations).

Cognitive effect: People tend to underestimate the time necessary to complete a specific task by overlooking potential issues or the necessary sub tasks.

Hard-Easy Effect

Definition: Tendency to be overconfident (under confident). The more (or less) difficult the task, the more overconfident (or under confident) one is. In other words: the difference between erroneous confidence and effective performance increases when difficulty is rising.

Cognitive task (goal): To make a judgement / an estimation about the difficulty of the task.

Cognitive context (situation): It is suggested that the task is easy/difficult.

Cognitive effect: People tend to underestimate the difficulty of the task when the task is difficult and to overestimate the difficulty of the task when the said task is easy.

KIT 2 – Allocating resources and planning

Optimism Bias

Definition: The tendency to be over-optimistic, overestimating favourable and pleasing outcomes. A person will believe to be less at risk of experiencing a negative event compared to others.

Cognitive task (goal): To make a judgement / an estimation.

Cognitive context (situation): The subject makes an estimation of his own risk of experiencing negative events.

Cognitive effect: The subject tends to neglect that possible negative consequence of bad choice may occur by overestimating the satisfactory outcomes.



KIT 3 – Selecting and assessing sources

Expertise Bias

An already-known psychological effect considered as a cognitive biases by the RECOBIA team.

Definition: The tendency to attribute a high level of perceived expertise to people with a socially desirable position in terms of knowledge, education, intelligence, social status and/or age. This is the case even if these attributes are not relevant for the issue in question.

Cognitive task (goal): To make an evaluation of credibility.

Cognitive context (situation): A number of sources are available.

Cognitive effect: People tend to believe that interlocutors with a high level of perceived expertise are more credible than others.

Objectivity Bias

An already-known psychological effect considered as a cognitive biases by the RECOBIA team.

Definition: The tendency to consider that people with perceived objectivity are more credible than others. Perceived objectivity will be high when the source is not suspected of trying to persuade others.

Cognitive task (goal): To make an evaluation of credibility.

Cognitive context (situation): A number of sources are available.

Cognitive effect: People tend to believe that those interlocutors with perceived objectivity are more credible than others.

KIT 3 – Selecting and assessing sources

Similarity Bias

An already-known psychological effect considered as a cognitive biases by the RECOBIA team.

Definition: The tendency to believe that people with similar characteristics than yours are more credible than others. Perceived similarity is based on the following determinants: demographic characteristics, sociological aspects and ideological system (values, attitude, opinions).

Cognitive task (goal): To make an evaluation of credibility.

Cognitive context (situation): A number of sources are available.

Cognitive effect: People tend to believe that the interlocutors with which they share similarities are more credible than others.

Familiarity Bias

An already-known psychological effect considered as a cognitive biases by the RECOBIA team.

Definition: The tendency to believe the interlocutors one is familiar with, are more credible than others. Perceived familiarity is solely based on the number of encounters between the two interlocutors.

Cognitive task (goal): To make an evaluation of credibility.

Cognitive context (situation): A number of sources are available.

Cognitive effect: People tend to believe those interlocutors they are familiar with are more credible than others.

Availability Bias

See KIT 1

KIT 4 – Selecting and interpreting information

Confirmation bias

Definition: The (very common) tendency for people to favour information that confirms their beliefs or hypotheses. The tendency to search for or interpret information in a way that confirms one's preconceptions.

Cognitive task (goal): To verify one's theory or judgement accuracy.

Cognitive context (situation): The subject needs to select information among a list. Some are confirming his initial assumption and others are disconfirming it.

Cognitive effect: Overconfidence in one's judgement and polarisation of opinion.

Contrast effect

Definition: The enhancement or diminishing of a weight or other measurement when compared with a recently observed contrasting object. One can refer to contrast effect whenever the judgement reflects a negative relationship between the implications of some pieces of information and the resulting judgement.

Cognitive task (goal): Evaluation of an object or a situation.

Cognitive context (situation): A recently contrasted observed object/situation is present with the object or situation to evaluate.

Cognitive effect: Enhancement or diminishing of the second object by contrast with the first object.

Availability Bias

See KIT 1

KIT 4 – Selecting and interpreting information

Recency effect

Definition: The tendency to remember the most recent information presented above all else or/and to attribute disproportionate salience to the most recent information received.

Cognitive task (goal): Evaluation of salience.

Cognitive context (situation): A list of several objects, situations is present.

Cognitive effect: People tend to attribute disproportionate salience to the most recent stimuli or observation.

Hostile media effect

Definition: The tendency to see a media report as biased due to one's strong partisan views.

Cognitive task (goal): Evaluation of credibility.

Cognitive context (situation): The subject has a position on an issue.

Cognitive effect: People tend to receive media coverage as biased against their opinions, regardless of the reality.

Mere exposure effect

Definition: The tendency to express undue liking for things merely because of the familiarity with them.

Cognitive task (goal): Evaluation of preference

Cognitive context (situation): A recurrent exposition to a situation or a subject.

Cognitive effect: People tend to express undue liking for things merely due to their familiarity with these things.

KIT 4 – Selecting and interpreting information

Negativity bias

Definition: The tendency to pay more attention and to give more weight to negative than positive experiences or other kinds of information.

Cognitive task (goal): Evaluation of importance.

Cognitive context (situation): Negative as well as positive situations are present in mind.

Cognitive effect: In their judgement, people tend to pay more attention and give more weight to negative rather than to positive characteristics of events or people.



KIT 5 – Building hypotheses and scenarios, drawing conclusions

Distinction bias

Definition: The tendency to view two options as more dissimilar when evaluating them simultaneously than when evaluating them separately.

Cognitive task (goal): Simultaneous presentation or separate presentation of two options.

Cognitive context (situation): Judgement about the similarity/dissimilarity of two options.

Cognitive effect: Overestimation of dissimilarity between two options when presented simultaneously.

Illusion of validity

Definition: The tendency to draw confident predictions based on consistent but predictively weak data.

Cognitive task (goal): Repeated, consistent but poorly predictive data leads to confident prediction.

Cognitive context (situation): Evaluation of a hypothesis.

Cognitive effect: When consistent but predictively weak information leads to confident predictions.

Illusory correlation

Definition: The tendency to inaccurately perceive a relationship between two unrelated events or to inaccurately remember a relationship between two events.

Cognitive task (goal): Judgement on the link between two events.

Cognitive context (situation): Unrelated events that support a prior belief.

Cognitive effect: Inaccurately perceiving a relationship between two unrelated even.

KIT 5 – Building hypotheses and scenarios, drawing conclusions

Stereotyping

Definition: Tendency to expect a member of a group to have certain characteristics without having actual information about that individual.

Cognitive task (goal): Judgement on the characteristics of an individual.

Cognitive context (situation): Knowledge about an individual to be a member of a certain group.

Cognitive effect: Expecting a member of a group to have certain characteristics without having actual information about this individual.

Hostile attribution bias

Definition: The tendency to over-emphasize personality-based explanations for behaviours observed in others while under emphasizing the role and power of situational influences on the same behaviour.

Cognitive task (goal): Judgement of the causal responsibility of the actor or of the situation.

Cognitive context (situation): Observation of other's behavior.

Cognitive effect: The tendency to over emphasize personality-based explanations for behaviors observed in others while under emphasizing the role and power of situational influences on the same behavior.

Anchoring bias

See KIT1 (qualitative and quantitative)

KIT 5 – Building hypotheses and scenarios, drawing conclusions

Halo effect

Definition: The tendency for a person's positive or negative trait to “spill over” from one area of their personality to another in others perception of them. For example, by linking intelligence to kindness, which is not necessarily true.

Cognitive task (goal): Judgement about specific independent characteristics of a person.

Cognitive context (situation): A prior or previous global judgement as been produced about a person.

Cognitive effect: Assimilation of the specific judgement to the global impression. Overestimation of the correlation between the independent characteristics of a person.

Out-group homogeneity effect

Definition: The tendency to see members of one's own group as being relatively more varied than members of other groups.

Cognitive task (goal): Judgement about a group of people.

Cognitive context (situation): Knowledge about a group of people.

Cognitive effect: Over-homogenisation of the member of another group. They seem all the same.

Backfire effect

Definition: The tendency to react to disconfirming information by strengthening ones beliefs.

Cognitive task (goal): To evaluate a hypothesis.

Cognitive context (situation): Disconfirming information is presented.

Cognitive effect: People react to disconfirming information by strengthening their beliefs.

KIT 5 – Building hypotheses and scenarios, drawing conclusions

Belief bias

Definition: An effect occurring when someone's evaluation of the logical strength of an argument is biased by the believability of the conclusion. A conclusion can be true even if it based on an erroneous argumentation.

Cognitive task (goal): Evaluation of the relevance of the logical articulation.

Cognitive context (situation): A logical articulation.

Cognitive effect: An effect when someone's evaluation of the logical strength of an argument is biased by the plausibility or even truth of the conclusion.



KIT 6 – Preparing a report, delivering conclusions

Conservatism bias	<p>Definition: A mental process in which people cling to their prior views or forecasts at the expense of acknowledging new information.</p> <p>Cognitive task (goal): Comparing, weighting information.</p> <p>Cognitive context (situation): New and former information is available.</p> <p>Cognitive effect: One's updated beliefs conservatively over weighting former conclusions and underweighting new information.</p>
Anchoring bias	<p>See KIT1 (qualitative and quantitative)</p>
Illusory correlation	<p>See KIT 5</p>
Distinction bias	<p>See KIT 5</p>
Backfire effect	<p>See KIT 5</p>

KIT 7 – Ascertaining findings

Choice Supportive Bias

Definition: The tendency to retroactively ascribe positive attributes to an option one has selected.

Cognitive task (goal): To re-evaluate past choices.

Cognitive context (situation): Different possible choices are available.

Cognitive effect: The tendency to remember one's past choices as better than they actually were by attributing the desired consequences to the choice and undesired consequences to the alternative (what has not been chosen).

Confirmation bias

See KIT 4

Backfire effect

See KIT 5

Conservatism bias

See KIT 6

KITs: Underlying cognitive effects and mitigation strategies

By definition, it is extremely difficult to mitigate the negative impacts of cognitive biases. They are indeed inherent to human nature in that they are the psychological translation of both biological constraints – the way in which the human brain is structured - and adaptive constraints such as self-preservation.

Pioneering research – Daniel Kahneman

Countermeasures aiming at reducing their negative impacts can nonetheless be devised. These measures are articulated around a generic principle, which could be summarised as ‘moving from System 1 to System 2’ according to the terminology of Daniel Kahneman. The Israeli-American psychologist was awarded Nobel Memorial Prize in Economic Sciences (shared with Vernon L. Smith) for his work on prospect theory. He is one of the pioneers of the research on cognitive biases. His initial work pertaining to this concept was conducted on behalf of the Israeli army with the objective of improving its recruitment methods.

About System 1 & System 2

System 1 could be described as the ‘auto-pilot mode’ of the human brain. Its way of functioning is fast, automatic, frequent and subconscious. It is by nature prone to cognitive biases. In other words, it leads human beings to making decisions – and analysis is a form of decision – unconsciously and without resorting to logic. System 1 is used in situations of information-overflow and under time-constraints.

The use of System 2 is much less 'natural' in the sense that it makes human beings more critical and in particular it allows them to question their own assessments. Kahneman labelled this second system as 'slow thinking' because it requires more efforts than System 1 to operate and is consequently significantly slower. The advantage is that System 2 is conscious and its functioning is based on logic.

The work conducted within RECOBIA aimed at identifying techniques to ensure that Intelligence Officers rely as much as possible on System 2 at critical moments of their analysis process. In short, solutions identified tend to raise awareness of Intelligence Officers when they enter a potential "cognitively risky area", where they can be subject to distortion of judgment.

For each Key Intelligence Task (KIT), a series of related cognitive biases were identified. Then, a common underlying "key principle" at the root of this group of biases was identified. This "key principle" relies on what triggers the cognitive bias: conjunction of an activity of judgement, evaluation, assessment or prediction - such as "what is the probability...", "what is the credibility..."- and a situation - such as a set of data, a profile of source, etc.

This work could be compared to the installation of warning lamps on the dashboard of a car, whose aim is to signal the driver that refuelling is necessary or that a tyre is deflated.

The tables presented on the next pages propose a classification of:

- A selection of a group of cognitive biases attached to each KIT
- The general underlying principle at the origin of each group of biases
- The general principle to mitigate this category of biases.

KIT 1 – Interpreting the request (NFI - Need for Information)

Cognitively speaking this is the first step in the analysis process. As it initiates the intelligence work, the negative effects of the cognitive biases pertaining to this task will be all the more significant since they may impact all the following tasks by steering the analysis in one particular direction. At this step, the main cognitive effect affecting Intelligence Officer could be summarized as ‘contamination’. In a nutshell, when confronted with the terms employed in the NFI, the brain will automatically and unconsciously link these terms to previous knowledge pertaining to the topic, the person requesting the information and/or the general context of the NFI. One often compares the brain with a computer, however this is a mistake as a hard drive and the memory of a computer can be totally erased; on the contrary, the short and long term memory of the human brain will always influence our evaluation and our perception of a new situation. This process cannot be described as “bias” or “prejudgement”, which imply a voluntary act of comparing elements or directing thoughts. Here, if the brain is influenced by the ideas, experiences, beliefs stored in the memory, this activity is completely unconscious. It will however affect one’s interpretation.

Main identified biases	Common underlying principle	General principle for mitigation strategies
Availability bias	Contamination	Reformulation of the “question” to avoid contamination by incoming information. Conscious identification of elements likely to unduly impact the judgement - numerical values for instance, rephrasing the NFI using less connoted synonyms etc.
Framing effect		
Anchoring (quantitative)		
Anchoring (qualitative)		

KIT 2 – Allocating resources and planning

First of all, it is worth noting that even an Intelligence Officer working alone needs to plan his resources – in this configuration he needs to decide in which manner his own time should be allocated to complete the different sub-tasks (research, exploitation of sources, writing etc.) required to perform the analysis. While deciding on resources allocation, human beings in general, tend to be over confident. They tend to underestimate the time needed to complete the tasks at hand, and to over-estimate the amount of work which can be done in a given period of time.

Main identified biases	Common underlying principle	General principle for mitigation strategies
Planning-fallacy	Overconfidence	De-centring or Decentration. A good mitigation strategy is for the Intelligence Officer to imagine that he is planning his tasks for someone else. It is useful to break down an action in sub-tasks and to evaluate the resources needed to complete each one of them. Adding them up will then tend to lead to a more accurate estimation than an overall assessment of the resources needed to complete the mission as a whole would.
Hard-easy effect		
Optimism bias		

KIT 3 – Selecting and assessing sources

Sources selection and the decision to rely for the analysis on one source rather than on another one, is a crucial step in the work of an Intelligence Officer. This activity is of course performed by case officers, who are in direct contact with the sources and to a large extent in charge of their recruitment. That said this activity is also relevant for analysts themselves and in particular when they decide to give more weight to the assessment of a specific source. Beyond availability – meaning that an Intelligence Officer tends to rely more on sources, which easily come to mind – the sources’ selection process is affected by a principle of ‘self-contamination’. Put differently, an Intelligence Officer tends to be unduly influenced by his perception of the personal characteristics of a source - such as age or social condition - while assessing and selecting them. Unconsciously, these characteristics can then have a more important weight in the interpretation than they should.

Main identified biases	Common underlying principle	General principle for mitigation strategies
Availability bias	Auto-contamination	Objectivation: Avoiding being unduly influenced by the peripheral characteristics of the source, such as availability, age, social condition, occupation. One solution is to make an analysis grid and rate sources (this is done in particular by recruiters).
Expertise bias		
Objectivity bias		
Similarity bias		
Familiarity bias		

KIT 4 – Selecting and interpreting information

The selection of information is closely linked to the selection of sources. However, the underlying principle is different. In this step, while the Intelligence Officer is evaluating the interest and the credibility of the information, he may be exposed to the phenomenon of self-reinforcement. The risk here is to unconsciously favour information which go in the same direction as the foreseen problematic or foreseen reply to a question.

Main identified biases	Common underlying principle	General principle for mitigation strategies
Availability bias	Self-reinforcement (1)	Objectivation: take into account and analyse diverging information (as well as information deemed of no interest). For example, it can be useful to prepare an analysis grid, and to rate the key information, based on criteria linked to the object of the mission.
Confirmation bias		
Contrast effect		
Recency effect		
Hostile media effect		
Mere exposure effect		
Negativity bias		

KIT 5 – Building hypotheses and scenarios, drawing conclusions

This step, based on the selection of sources and information, which have been oriented to respond to the initial (interpreted) request, can activate cognitive biases linked to self-reinforcement. An Intelligence officer can unconsciously favor hypotheses which correspond to pre-conceived ideas, and even to establish ungrounded links and causal relations between facts/information.

Main identified biases	Common underlying principle	General principle for mitigation strategies
Distinction bias	Self-reinforcement (2)	Questioning/ reconsidering: It is useful to take into account different or contrary interpretation. For example, compare thoroughly the conclusions with possible variations or contrary interpretation.
Illusion of validity		
Illusory correlation		
Stereotyping		
Hostile attribution bias		
Halo effect		
Outgroup homogeneity		
Anchoring (qualitative & quantitative)		
Backfire effect		
Belief bias		

KIT 6 – Preparing a report, delivering conclusions

In most cases, an Intelligence Officer has to provide a report or a note summarising his findings. He may also have to prepare a presentation of his conclusions and hypotheses. The underlying principle once again is ‘self-reinforcement’, with one aspect in particular: when going from thinking to writing (or to an oral presentation), an Intelligence Officer tends to give disproportional weight to pieces of information corresponding to his initial conclusions and to minimise the importance – or discard altogether disconfirming evidence. The rationale is to persuade oneself and others that the chosen theory is appropriate and accurate. The related cognitive biases will tend to increase the conservatism of the analysis and to anchor the convictions and narrative of the Intelligence Officer.

Main identified biases	Common underlying principle	General principle for mitigation strategies
Conservatism bias	Self-reinforcement (3)	Decentring: by writing, one synthesises thoughts and factual elements. De facto, this is a reduction of one’s reasoning with respect to the whole research undertaken. The risk is to formulate or present the results of the research in a more orientated or definitive way than wanted, or on the contrary to limit and reduce one’s reasoning to avoid the preconceived ideas of the reader.
Anchoring (quantitative and qualitative)		
Illusory correlation		
Distinction bias		
Backfire effect		

KIT 7 – Ascertaining findings

As the result of his initiative or upon request from his superior, the Intelligence Officer can be led to verify or deepen his findings. While this step should force him to step back and take a look at the overall picture, the Intelligence Officer will tend to self-justify his conclusions. Unconsciously, and for self-preservation purposes, the brain will tend to enhance the work done and reinforce the initial assessment.

Main identified biases	Common underlying principle	General principle for mitigation strategies
Choice supportive bias	Conformism/self-justification	Decentring. To overview the work done as it was done by someone else, by looking for contradictions, incoherence and errors.
Conservatism		
Confirmation bias		

Conclusion

Drawing from the general principle for mitigation strategies identified for each KIT, it is then possible to design tailored solutions to counter the negative impact of cognitive biases. Such solutions could be classified into three broad following categories.

- **Awareness raising programmes, training and exercises.** The mere awareness of the existence of cognitive biases is not sufficient to be immune from their effects. That said, knowing about this phenomenon is instrumental in improving one's capacity to identify risk-prone situations.
- **Organisational processes such as checklists or procedures.** For instance, if 'red teaming' is strictly practiced, it is likely to reduce the negative impact of some cognitive biases. In order to be efficient, the 'red team' should focus on potential weaknesses in the opponent's argumentation rather than on systematic contradiction. That said, in case the members of the two teams have similar backgrounds and training, socio-cognitive biases are likely to be triggered in the process, and the efficiency of the process reduced.
- **Tools.** As an illustration, tools allowing for the reformulation of the initial need for information (NFI) could allow for the mitigation of the above-mentioned anchoring effect. That said, software tools should not be considered as a panacea.

Some tools allow completing many tasks in an automated way and in a short timeframe could actually under certain conditions trigger additional biases or reinforce the existing ones.

To summarise, the RECOBIA project allowed for a better understanding of the effects of cognitive biases pertaining to the key tasks conducted by Intelligence Officers. Also, the project provided some insights on and paved the way for further research focusing on the possible mitigation strategies in an intelligence context. The Key Intelligence Tasks (KITs) identified and the attached scenarios are a first step in the design of methodologies for improved performance.

That said, the research conducted on cognitive biases has taught the research team to remain humble. In particular, the efficiency of the proposed mitigation techniques needs to be further confirmed in practice.

As Kahneman so well puts it: *“Except for some effects that I attribute mostly to my age, my intuitive thinking is just as prone to overconfidence, extreme predictions [...] I have improved only in my ability to recognise situations in which errors are likely [...] And I have made much more progress in recognising the errors of others than my own.”*⁵

⁵ Thinking, Fast and Slow”, Daniel Kahneman, Penguin Books, 2011, p. 417



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