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The role of a law enforcement intelligence analyst can be critical to operational outcomes. For an analyst, the intelligence cycle – a repetitive process of reviewing information, identifying data requirements and undertaking further assessment - is often subject to the constraints of short time-frames, resources and access to technical support. In this environment, the decisions made by analysts can sometimes be perceived as prone to bias.

Based upon interviews with analysts on their approaches to intelligence tasks, this Briefing Paper summarises research into the impact of bias on decision-making strategies. The research provides insights on how analysts employ intuitive and traditional strategies when approaching their tasks, and includes practical recommendations to enhance and support analytical decision-making.

This Briefing Paper highlights the work of CEPS researchers in the Mapping Analytical Decision Making program, one element in the wider Intelligence Methods Project. The CEPS research team comprises Kirsty Martin (CEPS PhD candidate), Associate Professor Mark Kebbell (CEPS Chief Investigator), Dr Louise Porter (Research Fellow) and Dr Michael Townsley (CEPS Associate Investigator).



Dr Ruth Delaforce

CEPS Research Fellow

A Qualitative Examination of Analyst Decision Making in Criminal Intelligence

Ms Kirsty Martin, Associate Professor Mark Kebbell, Dr Louise Porter & Dr Michael Townsley

Overview

Intelligence analysts are gatekeepers who transform data into meaningful information and actionable recommendations. Thus, intelligence is both a process and a product. Intelligence products present the results of their analyses and are used to inform higher-end decision making about resource allocations and operational tactics. Despite their potential influence, it is only recently that discussion has broached the decision making of the analysts themselves. Possibly as a result of hindsight bias, inquiries into 'intelligence failures' have identified cognitive biases as a significant factor in human error. As such, subsequent research has focused largely on the cognitive frailties apparent in analytical processes and potential de-biasing strategies (Kebbell, Muller, & Martin, 2010). While this has unquestionable value, there remains a gap in the fundamental empirical understanding of three key areas: decisions analysts make, decision strategies used and factors influencing strategy selection. To fill this gap, the authors' used the Critical Decision Method (CDM) to systematically explore analyst decision making (Crandall, Klein, & Hoffman, 2006). Through iterative sweeps, analysts reviewed a specific task they had conducted, gaining a depth and breadth unachievable with psychometric or observational methodologies.¹

More specifically, this research explored the application of traditional and naturalistic decision making theories in criminal intelligence analysis. Traditional methods are rule-based strategies that assume a rational decision maker and an objective, systematic process (Edwards & Tversky, 1967). Such structured processes provide a level of accountability, defensibility and transparency that is highly desirable to an intelligence agency. For this reason, it is argued that traditional methods may be highly valued and analysts may be encouraged to treat intelligence as a science (Martin, Kebbell, Porter, & Townsley, 2011). On the other hand, naturalistic methods are experiential and intuition-based. Rather than simply guessing, decision makers rely on past experience to rapidly assess situations and generate the appropriate course of action (Zsombok & Klein, 1997). Such unstructured processes can be highly subjective and invisible, with varying levels of deliberation involved. This lack of transparency may also contribute to increased opportunity for bias in decision making (Tversky & Kahneman, 1974). As a result, naturalistic methods may be devalued by organisations and practicing the art of intelligence may be discouraged (Heuer, 1999). Research suggests that both of these

¹ This study was part of a large mixed-method doctoral research program. Analysts' decision making was also measured and tested quantitatively in subsequent survey and experimental studies.

methods have advantages and effective applications (Zsombok, Beach, & Klein, 1992).

Taking this further, Cognitive Continuum Theory (CCT) suggests that, rather than being mutually exclusive, the two types of cognition used in traditional and naturalistic methods are often blended (Hammond, 2007). Applying this to intelligence, it can be hypothesised that analysts would employ methods comprising varying degrees of both analysis (traditional) and intuition (naturalistic). CCT would suggest that this combination will vary throughout the intelligence task contingent upon changes in the task and situation. Furthermore, matching the cognitive method with the task will improve the speed and accuracy of decision making (Hammond, 2007; Hammond, Hamm, Grassia, & Pearson, 1987).

A review of available literature suggests that analysts are decision makers, who may adapt their decision making strategies to fit the task and context that they face (Payne, Bettman, & Johnson, 1988).

Research Questions

Using a semi-structured interview technique known as the Critical Decision Method (CDM), this research explored analysts' decision making during specific tasks they had conducted. The primary research questions were:

- (1) What decisions do analysts face?
- (2) What strategies do analysts use to make decisions?
- (3) What factors influence analysts' strategy selection?

Method

Twelve intelligence practitioners participated in semi-structured interviews lasting between 55 minutes and one hour and forty-five minutes. The interviews involved a retrospective review of an intelligence task they had conducted that was particularly challenging or memorable for the practitioner. The CDM involved four iterative sweeps that gradually deepened the level of reflection of decisions made during the task under review (Crandall, Klein, & Hoffman, 2006).

The interviews were tape-recorded and transcribed verbatim. This material was analysed in a multi-stage process involving within and cross-case comparison. This iterative process generated a number of key themes relating to the research questions stated above.

Results and Discussion

What decisions do analysts make?

Three key themes were found to represent these decisions: content, process and product. The Content theme was characterised by decisions about information. The Process theme represented decisions about strategies, methods and techniques for completing the necessary subtasks. The Product theme comprised decisions about the presentation and communication of the resulting intelligence.

Content decisions were often associated with more intuitive processes than both the process and product decision types. Compared to content decisions, Process and product decision types were reported to be more often supported by standard operating procedures and templates.

These findings indicate that analysts make a wide variety of decisions and that these decisions range in the level of structure and guidance associated with them. It is interesting that the content decisions were the least supported by protocol or templates, and that they were made most frequently using intuitive strategies. This is important as decisions regarding information are crucial to the intelligence process. As a process, intelligence is the transformation of inform into useful assessments. The decisions about what information to seek out, include, value and reject will inevitably influence this transformation process. The implication of this is that mistakes here can have a significant snowball effect.

Analysts reported that process decisions were more supported by standard operating procedures (SOPs), yet there remained a high level of intuitive strategy. Where SOPs were not provided, analysts relied on common sense and previous experience to decide which avenues to follow and which techniques to utilise. The implication here is that mistakes in selecting appropriate processes will influence the end-product by changing the ‘transformation’: different techniques and processes will transform information in different ways and ultimately lead to different intelligence as a result.

Analysts also reported that the product decisions were more frequently supported by templates and standard procedure. Analysts indicated that, where formal rules did not apply, alternative courses of action were rarely considered. Instead, analysts felt that they had an automatic understanding of what was required of them. It is interesting that analysts did not devote much attention to decisions regarding the product, as end-user satisfaction is an increasingly important topic.

What strategies do analysts use to make decisions?

After identifying the decision points they faced during the intelligence task, iterative sweeps were used to deepen understanding of how they made those decisions. Analysis of this discussion identified seven key themes: common sense, recognition, mental simulation, routine procedures, concurrent generation of alternatives, standardised techniques and calculative strategies.

Common sense represented strategies that were largely automatic, requiring little conscious deliberation. Recognition involved a more deliberate process of assessing the situation and using previous experience to identify an appropriate choice. Mental simulation depicted strategies that used the imagination and knowledge to, either retrospectively or prospectively, simulate a series of events. Routine procedures can be described as habitual methods developed over time to provide guidance and structure to a process. Concurrent generation and evaluation of alternatives occurred infrequently. Standardised techniques included those that were set out in formal policies, SOPs, templates or known techniques. Calculative strategies included those decision processes that involved math-based algorithms to generate or select options.

Intuitive strategies were reported more frequently than structured, traditional decision strategies. However, these strategies ranged in the level of traditional (analytical) and naturalistic (intuitive) method involved. Figure 1 provides a depiction of this un-balanced strategy selection and plots the type of strategies by varying degrees of traditional and naturalistic characteristics.

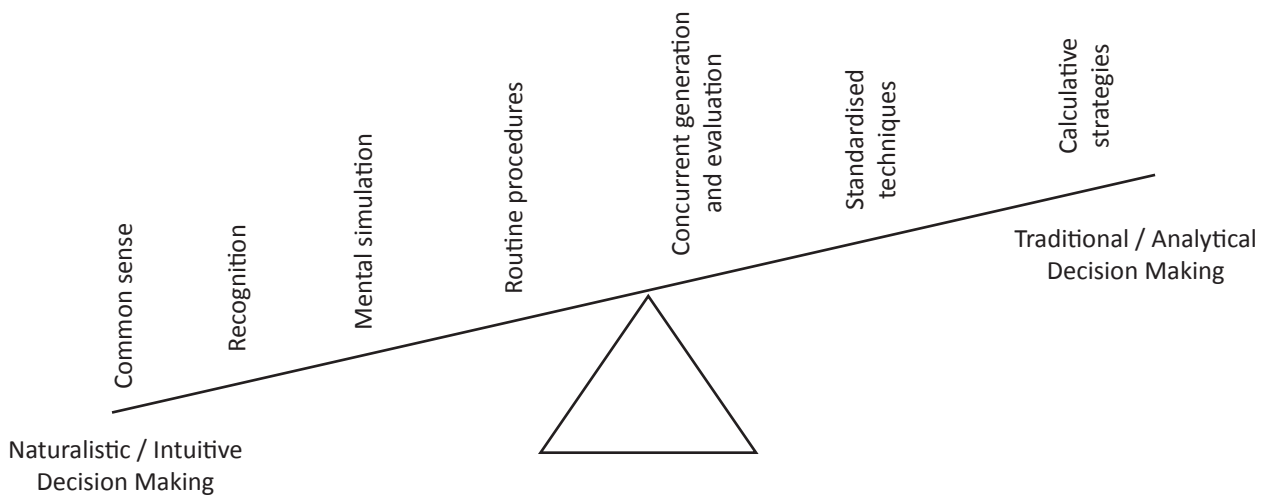


Figure 1. A visual depiction of the varying degree of naturalistic and traditional characteristics in strategies employed by analysts.

What factors influence analysts’ strategy selection?

During discussion of the strategies used, analysts also discussed factors they felt were influential to the way they made their decisions. In addition to this, the last sweep of the CDM presented analysts with hypothetical situations to further examine these influential factors. Analysis revealed five repeating factors that influenced the amount of structured or intuitive strategy involved in analyst decision making: experience, time, data, technology, and organisation.

The experience theme comprised of four different components: experience with crime and criminality; experience ‘doing’ intelligence; experience in the intelligence environment; and, others’ experience. The time theme represented discussion concerning the amount of time available to conduct intelligence analysis. The data theme involves the quantitative and qualitative forms of data that analysts used in their work. The technology theme referred to decision making and analytical support available to analysts. This included computer software for decision processes, statistical analysis and visualisation. The organisation theme represented factors relating to the culture, norms and standards present in both employing and external organisations.

The presence, or absence, of these factors influenced the degree of analysis and intuition in strategies employed, as demonstrated by the typical relationships modelled in Figure 2. Interestingly, experience is the only factor that increases intuitiveness when present and increases analysis when absent. Thus, over all, intuitiveness is more likely to be increased by the absence of the factors than the presence of them. However, if the data factor was identified by qualitative rather than quantitative data, its presence would also show a positive relationship with intuitiveness.

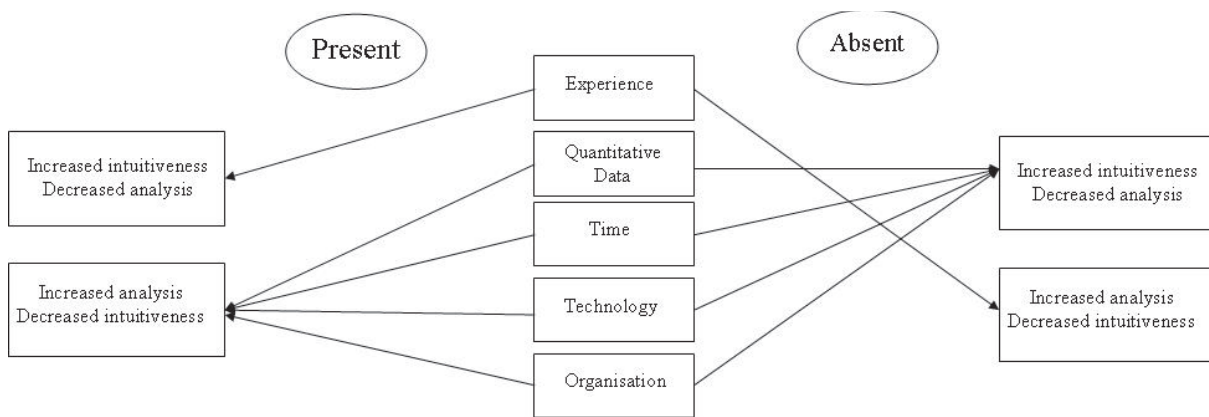


Figure 2. Typical relationships between analytical/intuitiveness and the factors identified as influential in strategy selection.

Summary

This research aimed to answer three key research questions and explore the application of traditional and naturalistic decision methods in intelligence analysis. Despite traditionally being conceptualised as a decision-support function, the results show that analysts make numerous decisions in each intelligence task. These decisions revolved around the themes of content, process and product.

As adaptive theories of decision making suggested, analysts utilised a number of different methods to make different decisions (Hammond, 2007; Klein & Yadav, 1989; Payne, Bettman, & Johnson, 1988). Interestingly, these methods often relied heavily on intuitive, experience-based strategies akin to naturalistic models of decision making (Klein & Calderwood, 1996; Zsombok & Klein, 1997). Where more traditional methods were mentioned, they were often either completed by a computer, or conducted in an informal way. The decision strategies employed could not, however, be classified as purely intuitive or analytical. This supports the CCT proposition that decision makers will more often than not employ a combination of the two (Hammond, 2007).

Analysts identified five key factors that they felt influenced their decision strategies: experience, time, data, organisation, and technology. These features correspond with those of naturalistic decision situations (Zsombok, Beach, & Klein, 1992) and intuition-inducing tasks (Hammond, 2000; 2007).

Taken together, these results indicate that there is a role for both science and art in criminal intelligence. However, when the intelligence task and context replicate naturalistic, intuition-inducing decision situations, analysts are likely to adapt their decision strategies to include more intuitive methods.

Implications

Three key practical implications can be drawn from these findings:

- Analysts are decision makers who may often use intuitive, automatic and less conscious decision methods. This creates opportunity for biases, error and miscommunication. To counteract this, analysts should be encouraged to reflect upon the decisions they make and the methods they use. This meta-cognitive awareness will allow them to learn from their experiences, identify subjectivity, and clearly communicate uncertainties.
- In intelligence, the decision task and environment are complex and naturalistic. As predicted by theory, the results suggest that this may have induced intuitive decision making. If organisations wish to increase the use of traditional, scientific methods, they must make the environment more hospitable to analytical decision making. If organisations wish to decrease the negative aspects of intuitive decision making, they can provide more substantial support in the way of technology and structured decision making methods.
- Analysts rely heavily on intuitive methods, which are often automatic and tacit. This, in turn, means that much of their knowledge and expertise is not recorded: when they move on to another agency this experience is lost. To counteract this, agencies should develop explicit programs of knowledge elicitation and retention to ensure an organisational memory is maintained. This can also be used to support and train both novice and experienced analysts.

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