The Cognitive and Psychological Resilience of Intelligence Analysts in the Age of Artificial Intelligence: Morphological Analysis, Future Scenarios to 2030, and Neurobiological Perspectives.

Eugenio Bilardo¹ and Emanuela Dyrmishi²

¹ Istituto Gino Germani di Scienze Sociali e Studi Strategici, Rome

² Centro Studi dell’Esercito, Rome

\*Correspondence concerning this article should be addressed to Emanuela Dyrmishi emanuela.dyrmishi@centrostudiesercito.it

Abstract

The advent of artificial intelligence (AI) has radically transformed the operational landscape of intelligence, posing complex challenges to analysts, cognitive and psychological resilience. These challenges arise from AI's capacity to psychometrically profile analysts using advanced behavioral and cognitive algorithms, predicting and potentially manipulating their decision-making processes. Information behavior aim to understand human behavior related to the search, retrieval, and use of information. It is based in research paradigms such as psychology, sociology and education (Waller et al., 2015).

Furthermore, human-AI interaction creates long-term cascading effects on analytical quality through short and long- term neurobiological mechanisms. This theoretical-conceptual study adopts General Morphological Analysis (GMA), combined with Parsons, Kruijt, and Fox's (2016) cognitive resilience model and other neurobiological concepts well known, to assess in detail the interconnections among technological, cognitive, organizational and neurobiological factors. The analysis explores possible configurations focusing on AI-human analytical interactions through systematic scenario development. Three primary scenarios emerge: AI dominance, balanced collaboration, and human-centric separation; balanced collaboration is identified as optimal. A backcasting roadmap with specific milestones from 2025 to 2030 is proposed to guide implementation.

Keywords: Artificial Intelligence, Cognitive Resilience, Psychological Resilience, Intelligence Analysis, General Morphological Analysis, Neurobiology, 2030 Scenarios

1. Introduction

Five main phases compose traditional intelligence: planning and direction, collection, processing, analysis, dissemination. Thus phases combined to organizational factors such as structure and philosophy, communication strategies, team resources and administrative support play a crucial role for the success of information system implementation (Yeoh & Popovic 2016).

The integration of artificial intelligence into intelligence processes represents a revolution that has deeply altered how analysts collect, process, and interpret information. This transformation unfolds across three key dimensions, each redefining the analyst's role and their relationship with technology:

1. large-scale data processing, (2) advanced predictive support, and (3) intelligent automation of processes. However, we must remember that consistent research suggest that AI and algorithms should be used cautionally as this may lead to algorithmic/automation bias (Labib et al 2021)

Modern AI systems can analyze terabytes of data—such as satellite imagery, social media posts, and financial transactions—in near real-time, identifying correlations (e.g., a terrorist network through metadata analysis) that would take human teams months.

This technological shift introduces significant cognitive and psychological challenges Among these, cognitive manipulation, information overload, and technological dependence intertwine with neurobiological implications such as dopamine-driven stress and the amplified cognitive biases (Glickman & Sharot, 2023).

Research Question: How can resilience be preserved and enhanced in the face of increasing AI autonomy and complexity through 2030?

Study Objectives: This study aims to: (1) map the multidimensional interactions between AI systems and analyst, neurocognitive and psychological resilience, (2) identify optimal configurations for human-AI collaboration, (3) develop actionable scenarios for organizational adaptation, and (4) provide a roadmap for maintaining analytical quality while integrating advanced AI capabilities.

Contribution to Literature: This research contributes to the emerging field of human-AI interaction in high-stakes environments by integrating cognitive resilience theory with morphological analysis methodology, offering both theoretical insights and practical frameworks for intelligence organizations navigating AI integration.

While the language remains academic, examples such as the rapid detection of a cyber threat using AI versus manual analysis (10 minutes vs. hours) are included to enhance accessibility for non-experts in intelligence or neuroscience.

To our knowledge, this is the first study to combine MGA with neurobiological aspects in assessing the interaction between AI and intelligence analysts, and it is the first to evaluate the theoretical interventions to be implemented by 2030 to make the most of the AI-human interaction. The next step is the longitudinal study to validate in the field what we have endorsed at a theoretical level.

https://asistdl.onlinelibrary.wiley.com/hub/journal/23301643/homepage/ARIST-forauthors