

The Significant Seven: An Intelligence Analyst Work Activities Assessment

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Introduction

LAS assesses that intelligence analysts have a more nuanced view of their work than would be predicted based on psychological research of other work domains. These findings may have implications for future efforts to improve or adjust individual and team work activity to improve analytic outcomes. We have high confidence in this assessment because analysis indicates these results are stable across the research population. While dramatically different Intelligence Community analyst populations could result in some differences, we predict that the results would likely be similarly nuanced.

Main Takeaways

LAS research findings conclude that analysts think about their work in a more nuanced way than in terms of “data”, “people”, and “things”, the three factors that resolve across most work domains according to psychological research. Seven distinct work activity factors were identified in LAS analysis of data collected from over 1000 SIGINT analysts.

Customer engagement plays an important role in analysts’ perceptions of both performance and work activity elements.

LAS aims to apply these “Significant Seven” work activity factors, together with the five previously identified performance factors and other LAS research outcomes, to test methods to improve analytic performance at the team level and to prototype work activity and performance alignment approaches that mission teams can customize to their needs.

Scope Note

During a period from 2015 to 2019, LAS researchers collected data on how over 1000 analysts conducting signals intelligence at multiple cryptologic centers rated their involvement in twenty-five work activity areas as well as the perceived sufficiency of that involvement. This data was used to create customized feedback to mission managers and their teams on work activity alignment as part of LAS Project WESTWOLF. The work activities and definitions (see Appendix A below) were developed and refined with input from multiple mission centers (1).

In 2020, LAS researchers aggregated anonymized work activity data collected over the course of Project WESTWOLF and conducted an exploratory factor analysis (2)(3). The resulting factor solution is stable (4), providing high confidence in the results as applied to SIGINT analysts, but only moderate confidence outside of the agency and culture where the factored data was collected. Further data collection in other environments would be required to determine how accurately these findings generalize to other analysts in the Intelligence Community.

Assessment

LAS research findings conclude that analysts think about their work in a more nuanced way than in terms of “data”, “people”, and “things”, the three factors that resolve across most work domains, according to psychological research (5). LAS research and analysis of data collected over several years under Project WESTWOLF identified seven distinct work activity factors, referred to as the Significant Seven, provisionally labeled:

Customer Communication and Transformational Authority

Information Sharing and Decision Making

Targeting

Discovery and Triage

Language Analysis

Reasoning and Critical Thinking

Target Analysis and Reporting

As in the [Fundamental Five](#) performance factors that were established in previous LAS research(6), customer engagement emerges as a key factor in the Significant Seven work activity analysis. In the Significant Seven, customer engagement factored into “Customer Communication and Transformational Authority,” whereas in the Fundamental Five it is a large component of the “Extrinsic Motivation” factor. The importance of customer engagement to the way in which analysts think about their work and performance is likely to impact the design of future interventions meant to improve analytic outcomes for mission teams.

Goal Setting for Next Stages of Research

LAS seeks to apply the Fundamental Five and the Significant Seven, together with other research outcomes and available data, to test predictions about methods for improving analytic performance at the team level and to apply the results in prototypes of customizable work activity and performance alignment tradecraft for mission teams (7)(8)(9). LAS predicts that bringing mission teams’ perceptions and expectations regarding performance and work activities into alignment will result in improved analytic outcomes. Based on the prevalence of the customer in these findings, available customer data will play an important role in these efforts, but ultimately, mission teams will drive the design and implementation of the action research efforts to come. The potential impact of effective, data-driven prototypes for improving analytic outcomes is significant.

Endnotes:

- (1) Wilson, M. A. & Paul, S. C. (2021). *Factor Structure of Signals Intelligence Analyst’s Work Activity and Performance: Introducing the Significant Seven and the Fundamental Five*. Technical Report released in partial fulfillment of Laboratory of Analytic Sciences grant. March 25, 2021.
- (2) Fummel, Rudolf J. (1988). *Applied Factor Analysis*. Northwestern University Press.
- (3) Suhr, Diana & Shay, Mary (2009). Guidelines for Reliability, Confirmatory and Exploratory Factor Analysis. Editors unnamed. *Western Users of SAS Software 2009*. San Jose, CA. 1-3 Sep, 2009. <https://www.lexjansen.com/wuss/2009/anl/ANL-SuhrShay.pdf>. Accessed 5 April 2021.
- (4) Shadish, W. R., Cook, T. D., & Campbell, D. T. (2002). *Experimental and quasi-experimental designs for generalized causal inference*. Houghton, Mifflin and Company.
- (5) Gibson, S. G. (2012). Generalized work dimension analysis. In M. A. Wilson, W. Bennett Jr., S. G. Gibson, & G. M. Alliger (Eds.), *The handbook of work analysis: Methods, systems, applications and science of work measurement in organizations*. (pp. 215–230). Routledge/Taylor & Francis Group.
- (6) Wilson, M. A. (2020). Introducing the Fundamental Five of Intelligence Analysts Performance. *LAS Blog Posts (2020)*. 1 May. [Introducing the Fundamental Five of Intelligence Analyst Performance](#). Accessed: 5 April 2021.
- (7) Groysberg, B., & Lee, L. E. (2008). The effect of colleague quality on top performance: The case of security analysts. *Journal of Organizational Behavior*, 29(8), 1123–1144. <https://doi-org.prox.lib.ncsu.edu/10.1002/job.558>
- (8) Friedman, J. A., Lerner, J. S., & Zeckhauser, R. (2017). Behavioral consequences of probabilistic precision: Experimental evidence from national security professionals. *International Organization*, 71(4), 803–826. <https://doi-org.prox.lib.ncsu.edu/10.1017/S0020818317000352>
- (9) Trent, S. A., Patterson, E. S., & Woods, D. D. (2007). Challenges for cognition in intelligence analysis. *Journal of Cognitive Engineering and Decision Making*, 1(1), 75–97. <https://doi-org.prox.lib.ncsu.edu/10.1177/155534340700100104>

Appendix A: Signals Intelligence Analyst Work Activity Factors and Definitions

Factor 1: Customer Communication and Transformational Authority

Customer Engagement: Interactions with customers to establish, maintain, satisfy or follow up on customer needs or improve outcomes

Transform: Add, Change, replace operational processes, especially integrating existing and emerging analytic capabilities

Factor 2: Information Sharing and Decision Making

Attend Meetings: Consider actual time spent in meetings and briefings

Collaborate: Approaching tasks utilizing common interest groups to enable teamwork and partnership with operational members and other IC organizations

Decision Making: The time, energy, and resources you spend selecting a best course of action from available options to resolve or handle the issue at hand before taking action. This may include systematic tasks like weighing options, considering alternatives, and examining component parts of consequences of a given choice.

Oral Communication: Oral discussion and or exchange of information in person, via VTC, telephone, Skype, etc. to inform peers, management, or customers.

Professional Development: Pursuing new or improved knowledge, skills and abilities e.g. self-development, NCS courses, external training, development programs, tool training, mentorship.

Written Communication: Written discussion and/or exchange of information via email, memos, written notes or comments, or trip reports in order to inform peers, management or customers.

Factor 3: Targeting

Query and Tasking Review: Conducting reviews required for legal and policy compliance, including auditing, "second set of eyes", for targeting, adjudicator tasks etc.

Tasking and Targeting Management: All aspects of analyst work related to establishing, updating or ceasing collection related to a target or selector using the SIGINT system, including necessary documentation.

Factor 4: Discovery and Triage

Discovery: Seek out and evaluate material loosely related or unrelated to established topics and tasks to identify new lines of usable information.

Operate Tools: Choosing the appropriate tool for the task and using it in accordance with task requirements. This includes applying relevant policies and knowing the correct "buttonology" to accomplish the task.

Query Data: Use the appropriate query processes and tools in a compliant manner in order to acquire answers to analytic questions or retrieve data.

Factor 5: Language Analysis

Scan: Review materials to evaluate for useful information.

Transcribe: Establish a verbatim or summarized transcript or gist of traffic, either in the source language or in English.

Translate: Translate foreign language materials into English, either word-for-word or in summarized form.

Factor 6: Reasoning and Critical Thinking

Infer: Introduce something as a reasoned conclusion; conclude by reasoning or deduction from premises or evidence as a component of critical thinking.

Predict: Anticipate potential or most likely outcomes, developments or effects from signs, symptoms, or historic events. May apply to analytic response, mission management or other aspects of workflow

Factor 7: Target Analysis and Reporting

Document: Establish a record of knowledge, processes, conclusions, workflow, ideation or other work.

Familiarize: Become familiar or acquainted with a subject, requirement, process, tool or capability.

Measure: Quantify, gather metrics to track/show productivity, progress or status.

Organize Data: Synthesize existing information into databases or other repositories into formats that can be researched, archived, and audited.

Plan: Establish a method, approach or procedure to advance a program, accomplish a goal or solve a problem. May apply to analytic response, mission management or other aspects of workflow.

Report Writing: Draft and/or edit analytic products consistent with Agency and ODNI guidance and policy.

Synthesize: Combine two or more separate elements to produce a new, more complex result or product; a component of critical thinking.