

**Assessment Title**

Sensemaking

**Assessment Description**

Sensemaking is a deliberate effort to create a cohesive understanding of what has happened, what is happening, and what might happen in a given situation. It is the process of creating situational awareness in situations with uncertainty.

**Who is the Army audience?**

The Sensemaking measure is appropriate for personnel who primarily work at the organizational level of leadership. The initial implementation is in the Project Athena Leadership area for students enrolled in the Command and General Staff Officers Course (CGSOC), but has the potential to encompass students from various leader courses.

**How does the Army benefit?**

The Sensemaking measure provides an assessment of more advanced and applied aspects of critical thinking than is captured in basic cognitive testing. Specifically, it is an assessment of an individual's ability to have effective situational awareness and judgment in uncertain situations. The Sensemaking measure is administered online through the Army Enterprise Assessment System (AEAS).

The Sensemaking measure assesses an individual's ability to make successful judgments and engage in effective decision-making in difficult situations wherein complete information is not available. Effective decision making is dependent upon strong situational understanding. This is especially true when situations are chaotic, dynamic, and unfamiliar. In all situations, there can exist uncertainty when decisions must be made or action needs to be taken. Sensemaking moves beyond situational understanding in that it involves making decisions in situations lacking complete information.

Intuition is the foundation for much of one's individual sensemaking (Moore, 2011). The automatic nature of intuition requires few cognitive resources and, therefore, allows the individual to process complex information beyond their normal span of apprehension (Moore, 2011). Sensemaking, however, is a heuristic-based form of situational understanding involving both intuition and intelligence and informs judgments beyond either one individually. Judgment within intelligence sensemaking likely improves as the individual explores and understands their sensemaking abilities. The Sensemaking measure can be used to assess current strengths and weaknesses in order to identify methods to improve sensemaking abilities. This can help leaders improve their situational awareness and confidence in judgments made in stressful and confusing situations. Improving sensemaking and situational awareness can positively influence leader decision making which benefits individual Army leaders and the Army as a whole.

**What kind of feedback do students receive?**

Personnel receive a detailed feedback report that provides the student with information on whether their performance on the measure is indicative of high, medium, or low sensemaking abilities. Based on their performance, the student is provided information on how to improve one's sensemaking ability.

**Why can the Army rely on this assessment?**

The psychometric properties of the instrument were established by the developers of the measure, Alsufiani, Attfield, and Zhang (2017), who surveyed postgraduate students from Middlesex University.

For test reliability (i.e., how consistently a construct is measured by an assessment), the Sensemaking measure produces results considered excellent for both the total sensemaking score as well as the four subscale measures.

For test validity (i.e., the degree to which the assessment measures what it was designed to measure), a factor analysis was conducted. Factor analysis, a statistical method that can be used to assess measurement validity, helps researchers explore or confirm the relationships between instrument items and identify the total number of dimensions represented on the measure. In this method of instrument validation, validity is provided by evidence based on the internal structure of the measure. This evidence is provided through analysis of internal relationships between instrument items and instrument components and how they conform to the intended construct as suggested by an established theoretical framework.

The factor analysis approach provided a very strong indication that the items in the measure fell on a single factor, thus indicating the structure of a single latent variable on sensemaking within the instrument. Further, a correlation analysis indicated that all subscales within the measure correlated with the root item of, “To what extent do you think conducting the given task under this condition helped you to make sense of the available information.”

## Fact Sheet Sources and Supporting Information

### Psychometrics—Test Reliability

Cronbach’s coefficient alpha was excellent for the overall sensemaking score and the constituent subscales.

<b>SENSEMAKING</b>	Total (Sensemaking) <sup>A</sup>	Gaining Insight <sup>A</sup>	Understanding Connections <sup>A</sup>	Gap Discovering and Bridging <sup>A</sup>	Structuring <sup>A</sup>
Cronbach’s alpha	0.97	0.96	0.93	0.94	0.98

### Psychometrics—Test Validity

All subscale scores were significantly positively correlated with the target sensemaking instrument item.

<b>SENSEMAKING</b>	Gaining Insight <sup>B</sup>	Understanding Connections <sup>B</sup>	Gap Discovering and Bridging <sup>B</sup>	Structuring <sup>B</sup>
Target Question Item	0.724	0.749	0.687	0.898

#### Notes

A: Reliability Metric—Cronbach’s Alphas: Poor (0.5–0.6), Questionable (0.6–0.7), Acceptable (0.7–0.8), Good (0.8–0.9), and Excellent (> 0.9)

B: Validity Metric—Correlation Categories: Poor ( $r < 0.10$ ), Acceptable ( $r = 0.11–0.30$ ), and Excellent ( $r = 0.31–1.0$ )

For Project Athena, sensemaking is supplemented with an assessment of elaborative processing, the tendency to be thorough and expansive when one is learning and thinking [i.e., the Elaborative Processing Scale (EPS) from the Inventory of Learning Processes (ILV); Schmeck, Ribich, & Ramanaiah, 1977]. The EPS scale has been found to have excellent test-retest reliability (0.80) and demonstrated acceptable to excellent estimates of convergent validity with integration, conjecture, interference, and analysis scores on a critical thinking test in a study on Army personnel. Cronbach’s alpha for the measure, an estimate of within-item reliability, was assessed in two Army samples. In both instances, this internal consistency was found to be acceptable with alphas of 0.78 and 0.70 in the two pilot samples respectively.

#### References

- Alsufiani, K., Attfield, S., & Zhang, L. (2017). Towards an Instrument for Measuring Sensemaking and an Assessment of its Theoretical Features. *Proceedings of British HCI* (pp. 1-5). Sunderland, UK: BCS Learning and Development.
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- Moore, D. T. (2011). *Sensemaking: A structure for an intelligence revolution*. Center for Strategic Intelligence Research, Washington, D.C.