

Background and Significance

- Endsley’s “Theory of Situation Awareness”¹ (Figure 1):
 - “...perception of elements of the environment within a volume of time and space, the comprehension of their meaning and the projection of their status in the near future.”¹
 - Critical cognitive construct and precursor of decision-making.^{1,2,3}
 - High-level situation awareness (SA): interpret key information and make accurate projections from a continuously changing situation: necessary for good decision-making.^{1,3,4,5}
 - Correlated with experience and training, accentuating importance of simulation in nurse anesthesia education.^{1,3}

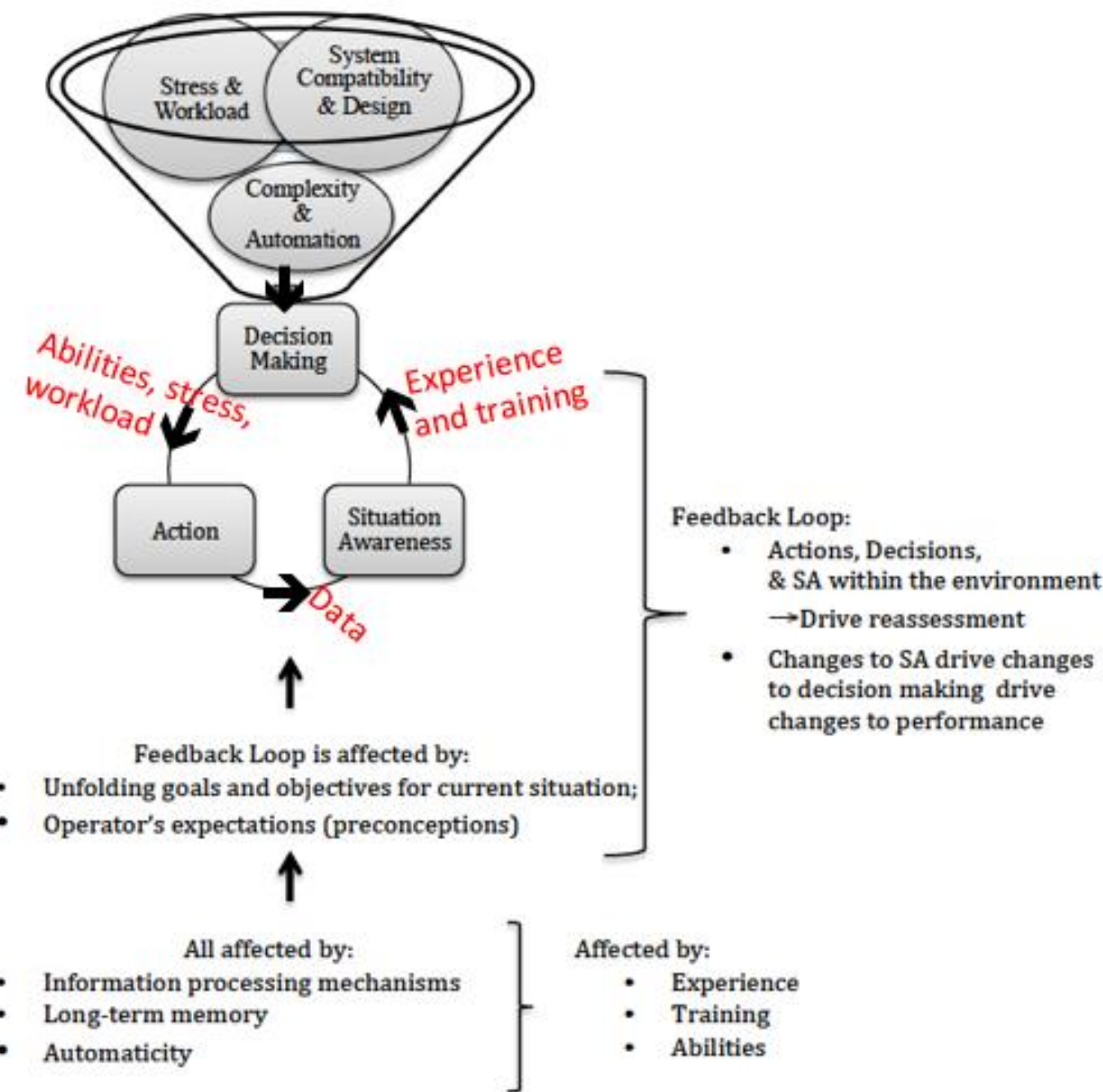


Figure 1. Depiction of feedback system described in Endsley’s “Theory of Situation Awareness” (Endsley, 1995).

- SAGAT “Situation Awareness Global Assessment Technique”⁴ :
 - Direct and objective measurement tool.^{3,4,6}
 - “Freeze-Probe” technique.^{3,4,6,7}
- Most recently adapted and validated in obstetrics, trauma, emergency medicine,⁶
- To date, there is no direct and objective assessment tool to quantify SRNAs’ SA.

Funding

\$13,648.45 General Research Grant

Methodology

- UTH Science Houston IRB approved
- Exploratory sequential mixed methods design (Figure 2)

Sample Selection

- Purposive Sampling: CRNA, Nurse Anesthesia Educators

Phase I	Phase II
<ul style="list-style-type: none"> 7 Subjects Nurse anesthesia program large, urban university Southwestern United States 	<ul style="list-style-type: none"> 49 Subjects Nurse anesthesia programs across the United States

Data Collection and Methods

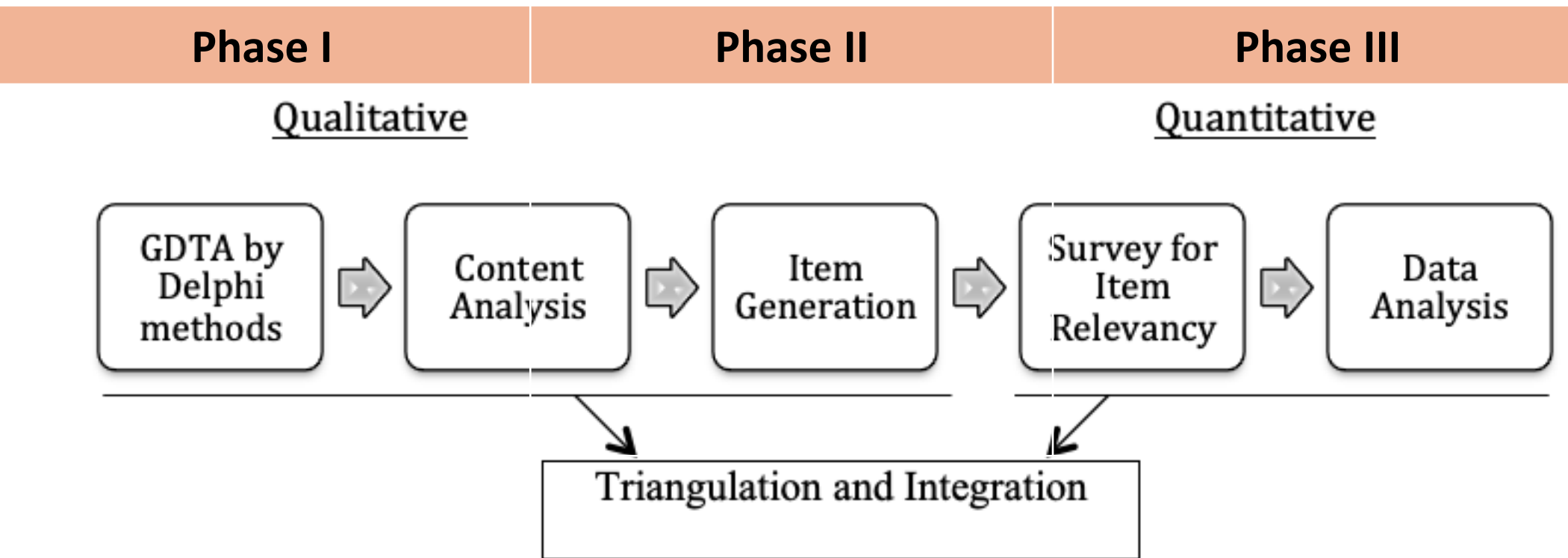


Figure 2. Exploratory Sequential Mixed Methods Design. QUAL > quan

- Goal Directed Task Analysis (GDTA)⁴ [Figure 3]:
 - 7 content experts using e-Delphi methods:
 - 3 rounds with verbatim feedback of responses
 - 70% consensus minimum threshold

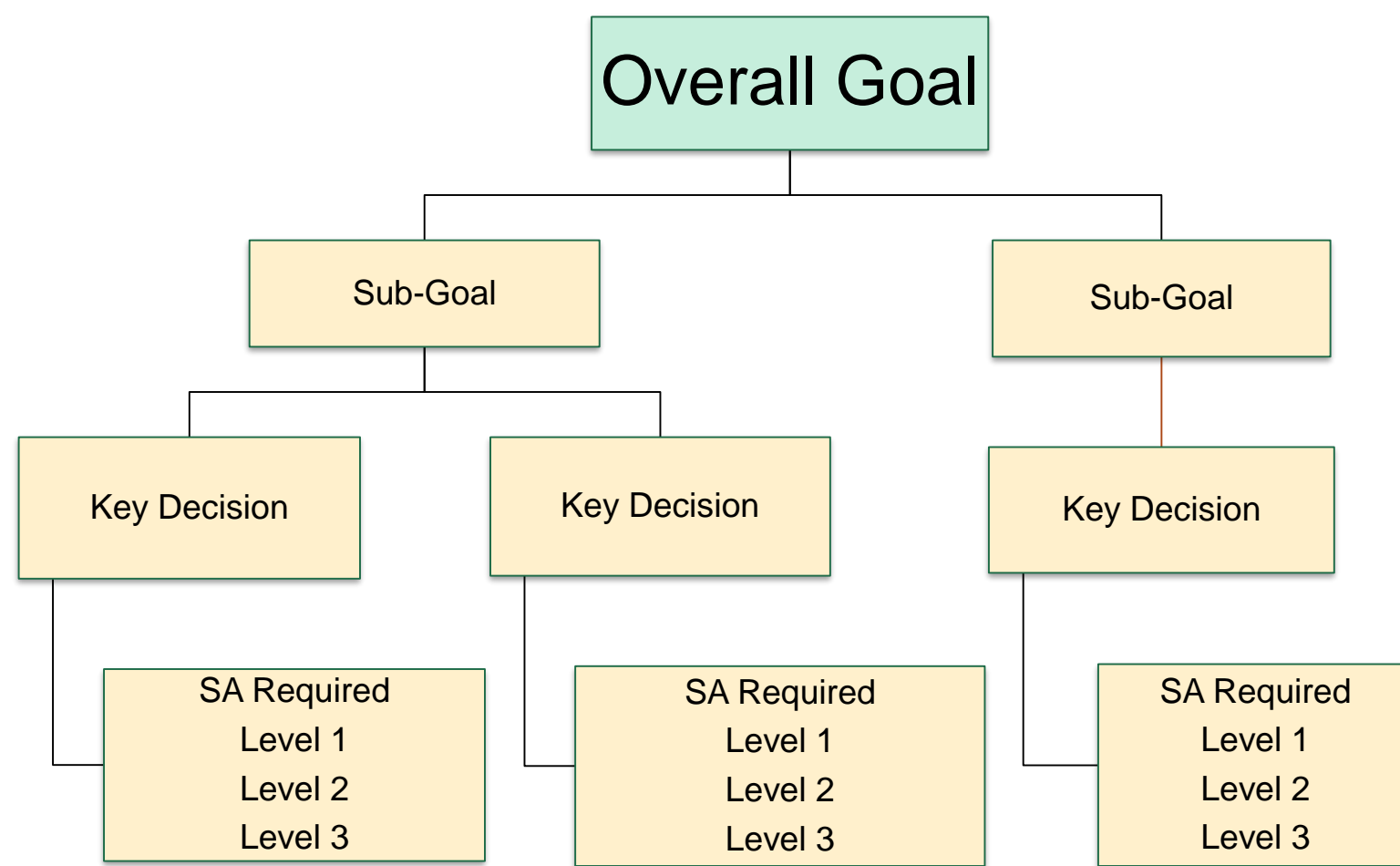


Figure 3: Goal Directed Task Analysis (GDTA) as recommended by Endsley. Data for depiction adapted from M. Wright et al, 2004.

Results and Data Analysis

- “Induction of General Anesthesia with Oral ETT Placement”:
 - 3 sub-goals and 58 SA requirements identified:
 - 71-100% Consensus

Sub-Goals	SA Level 1	SA Level 2	SA Level 3
Hemodynamic Stability	4	3	3
Ensure Resp/Ventilation	11	11	13
Induce Anesthesia	1	5	7

- 39 items generated by content analysis.
- 40 subjects ranked items for relevancy to simulation scenario.
- 21 items isolated for SAGAT inventory item pool.

Relevancy Rankings (Mean)	Item Content Validity Indices (I-CVI)	Scale Content Validity Indices (S-CVI/AVE)
2.0 - 2.93	0.74 – 1.0*	0.92***
2/39 I-CVI < 0.83**		
21 items mean rankings > or = 2.5	*6/39 items ranked by 39/40 subjects	***Excellent validity = 0.90
	**Excellent Validity = 0.83	

Discussion and Conclusion

- First direct and objective SA measurement tool for SRNAs.
- Formative assessment tool for routine anesthetic concepts in addition to high risk, low occurrence events.
- Useful in assessing simulation’s impact on SRNA clinical decision making and can direct didactic and clinical training experiences.
- Systematic exposure to established and effective patient management protocols in a controlled environment can improve SRNA SA and decision-making.

References

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