Situational Awareness Linked Indicators Adapted to Novel Tasks (SALIANT)

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HP Activity Categories:
Assessment of situational awareness [1]

Resource Type:
Method

Abstract:

Situational awareness has been recognized to be crucial for ensuring the effectiveness of teams performing in dynamic and complex environments. Given its criticality, researchers have called for reliable and valid measures of situational awareness that can be used as a basis for designing training. However, most of the available measurement techniques have been criticized as being insufficient for assessing situational awareness. Further, there is a dearth of research being conducted to measure team level situational awareness even though much of situational awareness is needed in team settings. Therefore, in this paper we describe a methodology for assessing team situation awareness.

This method Situational Awareness Linked Indicators Adapted to Novel Tasks (SALIANT) contains theoretically-based behavioural indicators of team situational awareness, which are adapted to specific task events. This method results in a behavioural checklist that can be used to behaviourally assess situational awareness in teams. A subsequent paper describes empirical evidence testing the reliability and validity of this measurement approach.

References

Developer and source:


General Description

Purpose:

The purpose of SALIANT is to provide a theoretically-based method for assessing team situational awareness. The focus is on behavioural processes related to team situational awareness. The SALIANT measure is particularly interesting because it focuses upon team SA. Although its dependence on rather elaborate scripting of scenarios and observable behaviours rules, the methodology is of relevance to the development of a measure of teamwork.

Type (e.g. observation, questionnaire, interview, checklist, measurement instrument, etc.):

Measurement instrument/checklist

Technical description of method or tool etc

Description of the content/study:

SALIANT, developed by the US Naval Air Warfare, Centre involves the use of a theoretically based list of behaviours (known to be associated with SA) to assess team behaviour. It is an inferential technique that requires experts to rate SA based upon implicit evidence from observable correlates.

The SALIANT method comprises of 5 phases. Each phase is crucial to ensure that the construct of team situational awareness is measured consistently and objectively. They are:

1. Delineation of behaviours theoretically linked to team SA (24 behaviours indicators were identified from the literature and clustered into 5 categories).
2. Development of scenario events (to provide opportunities to demonstrate team SA behaviours).
3. Identification of specific, observable responses.
4. Development of a script (to ensure consistency across teams).
5. Development of an observation form (to rate the specific observable behaviours identified in phase 3). (Muniz et al.,1998)

Technical requirements for using the method, tool, etc:

In case you use in simulation environment: simulators/ PC

Measure/Response Type:

The answers are in terms of absence or presence of identified specific, observable behaviours already pre-determined and reported on the observation form created (phase 5).

Results obtained and interpretation:

The behaviours could be rated as either positive, indicating good SA, or negative, indicating poor SA. For each behaviour exhibited by the team, they received one point for a positive behaviour, and a negative point for a negative behaviour. The sum of the points indicated overall team SA.

Evaluation

Advantages:
Finely adapted to the specificity of the tasks

Good inter-rater reliability

Relatively easy to use (Observation form is easy to use)

One of the few methods of studying Team SA

Disadvantages:

The process is time-consuming and labour intensive

Limited to highly observable team behaviours.

Need of an existing theoretical data base of behaviours linked to team SA

First simulation to identify observable responses

Alternative Methods:

SART

Usability (ease of use, efficiency, effectiveness)

Ease of use:
medium

Efficiency:
medium

Effectiveness:
medium

Constraints concerning conditions of use:

It can be adapted and used in field trials experiments as well as in simulator environments.

The development of an operationally relevant scenario requires extensive knowledge about the tasks, standard operating procedures, and regulations required for a team to perform their missions.

Reliability:

The preliminary study with aircrews provided some success of the measure (Bowers et al. (1998 p. 12-5).

Reliability: Very good inter-rater reliability. Originally constructed as a five-factor scale but component analysis reveals a unitary scale (R. Breton, S. Tremblay; S. Banbury, 2007)

Fink and Major (2000) compared the relative efficacy of SALIANT against two other SA measures, situation awareness probe technique (SAP) and SART. SALIANT showed slightly better psychometric properties and the authors conclude that SALIANT is a very promising measure but that additional research is clearly needed.

Validity:

Validity: Good correlation with SART (concurrent) and performance (predictive). (R. Breton, S. Tremblay; S. Banbury, 2007)

Required effort (to conduct & to analyse):
Although the (24) generic behaviour indicators can be used, scenarios, responses, scripts, and reports forms must be developed for each team task.

High effort is required.

**Level of HF expertise needed (required user qualification)**

High: high level of expertise required, only for experts, lots of training required

Other expertise needed (required user qualification):

SMEs

**Cost Information**

Very low: (<100 €) low costs to purchase or free license, no special devices necessary

Experiences of use by SESAR partners (including references):

n/a

Reported and/or published experiences of use (including references):

See references, developer and source above.

Applicability to lifecycle phase (E-OCVM):

V2, V3

Application Area:

The methodology was developed to be one that would be appropriate for variety of team applications since the behaviours are general enough to be used in natural (fields) or technological environments. First preliminary study was conducted for aircrews.

Keywords:

Situation Awareness, Team Situation Awareness, Measurement,

Short Description:

The purpose of SALIANT is to provide a theoretically-based method for assessing team situational awareness. The focus is on behavioural processes and indicators related to team situational awareness. This method results in a behavioural checklist that can be used to behaviourally assess situational awareness in teams.