

NRC Independent Evaluation of INPO's Safety Culture Traits Validation Study

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Purposes of the Study

- Independently evaluate INPO's approach and data analysis decisions
- Assess whether the factors from INPO's safety culture (SC) survey correlate with other measures of SC and equipment performance the NRC has available

INPO/NEI/NRC Roles

- Nuclear Energy Institute funded the data collection
- INPO developed the survey, oversaw administration, performed majority of the analyses
- NRC reviewed/commented on survey items and study design
- Idaho National Lab, under contract to NRC, independently verified INPO's analyses, conducted additional analyses

Examples of NRC Measures

- Number, source and type of allegations
- Performance indicators maintained under the Reactor Oversight Process (ROP)
- Inspectors' assignment of SC aspects to inspection findings
- Location and movement in the ROP Action Matrix
- Cross-cutting and substantive cross-cutting issues identified during mid-year and year-end performance assessments

Overview of Criterion Validity Results

- Correlations between the factors/subfactors and NRC 2009 measures were satisfactory and in the expected direction
- Correlations between factors/subfactors and NRC 2008 measures weaker but also in expected direction

Example SC Validities*

Factor	Variable	Correlation
Mgt Responsibility	HP Aspects	.31
Raising Concerns	Substantiated Allegations	.27
Decision Making	PI&R Aspects	.38
Supv Responsibility	Total Aspects	.30
Questioning Attitude	HP Cross-cutting Issues	.35
Safety Communication	Total Aspects	.30
Personal Responsibility	HFIS Communication Issues	.26
Prioritizing Safety	HFIS Work Practices/Procedures	.27
Training Quality	Total Aspects	.29

* Correlations absolute values

Example Equipment Validities *

Factor	Variable	Correlation
Mgt Responsibility	Power Changes/7000 hrs	.38
Raising Concerns	Alert Notification Sys Unavailability	.27
Decision Making	EDG Actuations	.38
Supv Responsibility	Findings related to Initiating Events	.39
Questioning Attitude	Forced Outage Rate	.43
Safety Communication	Forced Outage Rate	.34
Personal Responsibility	Unplanned auto scrams	.30
Prioritizing Safety	No sig correlations	-0-
Training Quality	EDG Actuations	.43

* Correlations absolute values

NRC Conclusions

- INPO methods, data analyses and interpretations appropriate
- Workshop traits supported by either a factor or subfactor from INPO survey
- Correlations of Questioning Attitude, Supervisor Responsibility, Decision Making, Training Quality and Prioritizing Safety factors with other measures suggest they should not be ignored

Factors from Other Domains

- Analysis techniques applied by INPO are standard in survey research
- Used to identify factors in many other settings
- Handout includes a few examples from healthcare, construction, manufacturing and small business settings

Example of Healthcare Survey Factors: Agency for Healthcare Research and Quality

Factors	Definition
Communication openness	Important patient care information is transferred across hospital units and during shift changes
Feedback & communication about error	Management provides a work climate that promotes patient safety and shows that patient safety is a top priority
Frequency of events reported	Staff feel that their mistakes and event reports are not held against them, and that mistakes are not kept in their personnel file
Handoffs & transitions	There is a learning culture in which mistakes lead to positive changes and changes are evaluated for effectiveness
Management support for patient safety	Procedures and systems are good at preventing errors and there is a lack of patient safety problems

Agency for Healthcare Research and Quality (con't)

Factors	Definition
Non-punitive response to error	Staff feel that their mistakes and event reports are not held against them, and that mistakes are not kept in their personnel file
Organizational learning—Continuous improvement	There is a learning culture in which mistakes lead to positive changes and changes are evaluated for effectiveness
Overall perceptions of patient safety	Procedures and systems are good at preventing errors and there is a lack of patient safety problems
Staffing	There are enough staff to handle the workload and work hours are appropriate to provide the best care for patients

Agency for Healthcare Research and Quality (con't)

Factors	Definition
Supervisor/manager expectations and actions promoting safety	Supervisors/managers consider staff suggestions for improving patient safety, praise staff for following patient safety procedures, and do not overlook patient safety problems
Teamwork across units	Hospital units cooperate and coordinate with one another to provide the best care for patients
Teamwork within units	Staff support one another, treat one another with respect, and work together as a team

<http://www.ahrq.gov/qual/hospsurvey10/>

Possible Options for Discussion

Option	Pros	Cons
No change to workshop traits	Stakeholder agreement	Future research results w/ different structures
Adopt survey traits	Probably align w/ future research	Does not apply to all stakeholders
No traits in policy statement	Limits communication; Allows future research	Lack of guidance
Only traits that agree w/factors	EDG Actuations (NRC)	Omits Ques Att
Program offices decide	Limits communication; Allows future research	No high-level agreement across stakeholders
Modified traits, some discussion of subtraits	More future flexibility; Better align w/ research; Close to traits	Not perfect alignment with traits; Mgt factor is very large