Isolation, Confinement, and Extreme Environment Governance

M15

SPACE & EXTREME ENVIRONMENTS

3

PRIMARY GOVERNANCE RISK FACTORS (STUSTER)

45 dBA

EVIDENCE-BASED ACOUSTIC STANDARD

0

CONFINING INSTITUTIONS WITH EVIDENCE-BASED GOVERNANCE

THE GOVERNANCE PROBLEM

Human beings placed in isolation and confinement for extended periods exhibit predictable patterns of psychological and physiological degradation. Stuster (2010) identified interpersonal issues, monotony, and inadequate autonomy as the three most consistent predictors of adverse behavioral health in analog environments — all institutional governance failures. In an environment people cannot leave, every environmental stressor is a governance choice, not a design constraint.

EVIDENCE BASE

Stuster, J. (2010). Behavioral Issues in Long-Duration Space Expeditions. NASA TM-2010-216130

Four decades of analog environment research — the primary governance evidence base for isolated confined environments

"Interpersonal issues, monotony, and inadequate autonomy are the three most consistent predictors of adverse behavioral health across analog environments. All three are governable institutional design variables, not individual character failures."

Kanas, N., & Manzey, D. (2008). Space Psychology and Psychiatry, 2nd ed. Springer. doi:10.1007/978-1-4020-6770-9

Systematic review of psychological health in isolated space environments

"Displacement of negative emotions from mission control to crewmates is a documented governance risk. Governance structures that reduce communication friction and preserve crew autonomy significantly reduce this risk."

Maslach, C., Schaufeli, W. B., & Leiter, M. P. (2001). doi:10.1146/annurev.psych.52.1.397

Six person-job mismatch domains as organizational governance framework

"The six mismatch domains that produce burnout on Earth produce analogous degradation in isolated confined environments. Organizational design is the intervention — not individual resilience."

Ulrich, R. S., et al. (2008). doi:10.1177/193758670800100306

Evidence-based design standards with heightened consequence in extreme environments

"Acoustic environment above 45 dBA produces measurable physiological stress. In isolated confined environments where there is no option to exit the stressor, every environmental variable is a governance choice."

SIX GOVERNANCE DIMENSIONS

1	Environmental stressor governance (acoustic, thermal, lighting, air quality)
2	Psychological safety infrastructure
3	Social cohesion and community governance
4	Autonomy and agency preservation
5	Temporal governance and chronobiological standards
6	Exit and emergency response governance

PIONEERING GOVERNANCE

Documented environmental standards (acoustic ≤45 dBA, lighting, thermal, air quality) with continuous monitoring and formal escalation protocols; psychological health monitoring with crisis escalation that does not penalize help-seeking; crew composition standards with pre-deployment cohesion assessment; formal privacy and personal space protocols reviewed by all participants before deployment; documented circadian rhythm protections and work/rest scheduling; written emergency response protocol with defined triggers and mission abort criteria.

WHO SHOULD PRIORITIZE THIS MODULE

- Space agencies and commercial space operators
- Antarctic and polar research stations
- Submarine and naval vessel programs
- Long-term care and residential healthcare facilities
- Correctional and detention facility governance
- Intensive care and isolation unit design programs

Take the Free Assessment **nsag-site.vercel.app**

CE sessions for M14 and M15 are in development (Sessions 16–17 of the Core CE Program). Free assessments live now. Email collins.ra@northeastern.edu to be notified when sessions are released.