Motivational Factors for Why Women Pursue Air Traffic Management: Women in Male-Dominated Fields

Psychosocial outcomes: a scoping review with takeaways for safety industries

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Introduction: the context

Lack of fit and hegemonic masculinity shape who belongs

Women in male-dominated work

- Lack of fit with the occupational identity
- Entrenched beliefs about gender roles
- Historic exclusion; WWII workforce entry

Safety-critical industries

- Construction, engineering, aerospace, health care, policing, paramedicine, cybersecurity, maritime
- Hegemonic masculinity
- Macho or militaristic occupational identity

What why tried to investigate

What are the motivational factors for why women pursued an air traffic management aviation safety career in the past compared to now?

Method: Use cognitive interviews with women in past Australian ATM roles and those in current roles to discuss motivational drives and safety culture challenges. Compare and contrast the cohorts.

Ethics said no. Plus limited papers on Air Traffic Control.

Pivot: Conduct a Population-Exposure-Outcome review of critical system safety industries (socio-technical systems) with male-dominated professions and determine the takeaways for safety industries.

Population-Exposure-Outcome review of 452 Scopus records, with synthesis of 15 relevant studies

Introduction: hazards and outcomes

Hazards sit in work design, systems and relationships; outcomes follow

Psychosocial hazards

Interactions, work design and systems of work (WorkSafe, Comcare).

Organisational culture

Tolerated hegemonic masculine culture; passive leadership.

Wellbeing outcomes

Depression, anxiety, PTSD, suicidal ideation; burden of reporting.

Identity-related outcomes

Masking, identity censorship, self-presentation, Queen Bee, distancing.

Introduction: gap, aim and questions

Policy has moved fast; evidence on workplace subcultures has not

Policy versus evidence

- 2024-26: rapid Australian mandates, high industry variance
- Written policy, but subcultures persist
- Legislation alone does not change behaviour

Aim and questions

- RQ1: Which hazards and wellbeing outcomes are reported?
- RQ2: Which identity outcomes and strategies, and how do they relate to safety?
- RQ3 (to decide): policy, or the safety-identity overlap?

Method: eligibility criteria

Five criteria plus a ten-year window define the included studies

Criterion	Applied at abstract level
1 Female sample	Women, or sex-stratified results for women
2 Male-dominated safety-critical setting	Construction, mining, maritime, aviation, policing, military, surgery
3 English-language publication	All 15 records
4 Western cultural lens	Studies from India, South Africa and Chile flagged as outside
5 Psychosocial safety or identity outcome	Hazard, wellbeing, coping or identity measured or described
Published 2016-2026	Export range

Method: process and synthesis

PRISMA-ScR with two-reviewer screening; narrative synthesis

Search and screening

Scopus to Excel, title screen, then Covidence with two reviewers.

Data charting

Title, sample, design, setting, measures, findings, limitations.

Narrative synthesis

Inductive grouping of hazards, wellbeing and identity outcomes.

Status: title screening done (452 to 167); 15 records by one reviewer, so provisional.

Open decisions: search terms, inter-rater reliability, who leads charting, RQ3.

Results: study selection

Eight of 15 abstract-reviewed studies meet the plan's criteria

452

Scopus records, 2016 to 2026

167

retained at title screening against the framework

15

papers read and charted by one reviewer

8

meet all five criteria (6 clear, 2 likely)

Results: the eight eligible studies

Policing, military, maritime, aviation, surgery and construction are covered

Study	Setting	Design	Focus
Williams 2025	Surgery, US	Longitudinal sampling	Burnout, persistence
Veldman 2021	Military, Belgium	Daily diary, 61 women	Distancing, wellbeing
Irizar 2023	Police, military, UK	Cohort, 14,145 police	PTSD, alcohol use
Swedish police 2025	Policing, Sweden	Qualitative, 11 women	Gendered norms
Pike 2021	Maritime, UK	Qualitative	Harassment, safety
Female pilots 2020	Aviation, US	Survey, 1,499	Resilience
Lo 2024*	Construction, resources	Systematic review	Violence, stress
Construction review 2026*	Construction	Systematic review, 62	Hazards, prevention

* Likely eligible: reviews span countries and mixed samples; confirm at full text.

Results: hazards and culture

Harassment, trauma and weak support are evidenced; justice and change are not

Harassment and violence

GBV reported in construction; seafarers expect harassment.

Poor support

Surgeons: authority challenges predicted burnout.

Traumatic events

PTSD and harmful drinking measured in police and military women.

Hostile culture

Hostile climates and contest culture (context studies).

Job demands and design

Construction review frames 28 hazards as job demands.

Not yet evidenced

Organisational justice and change management: none in abstracts.

Results: psychological wellbeing

Burnout, PTSD, alcohol use and low resilience appear across settings

Burnout

Surgeons: authority challenges predicted burnout over time

PTSD

Probable PTSD 3.7% police, 4.5% military women

4.7%

harmful drinking in military women, 2.4% in police

1,499

female pilots: lower resilience than general norms

Stress

GBV linked to higher stress, lower job satisfaction

Depression

Mining: discrimination link (mixed sex, context study)

Results: identity-related experiences

Identity work appears as distancing; masking and censorship are not yet evidenced

Evidenced

- Soldiers distanced from other women on high-threat days
- Distancing linked to lower wellbeing and motivation
- Police women navigate gendered norms despite equality policy

Not yet evident

- Masking and identity censorship named in no abstract
- Reporting burden and cultural safety not measured
- Queen Bee in titles only; abstracts unread

Results: responses and gaps

Supportive supervision is evidenced; evaluated responses are not

Supervisor support

Linked to psychological safety and turnover intent in 24 countries.

Prevention first

38 preventive measures across three levels (construction review).

Feedback and peers

Positive feedback, especially from women, raised persistence intent.

No intervention trials

No intervention evaluation in the 15 abstracts.

Policy versus practice

No abstract evaluated the 2024-26 Australian mandates.

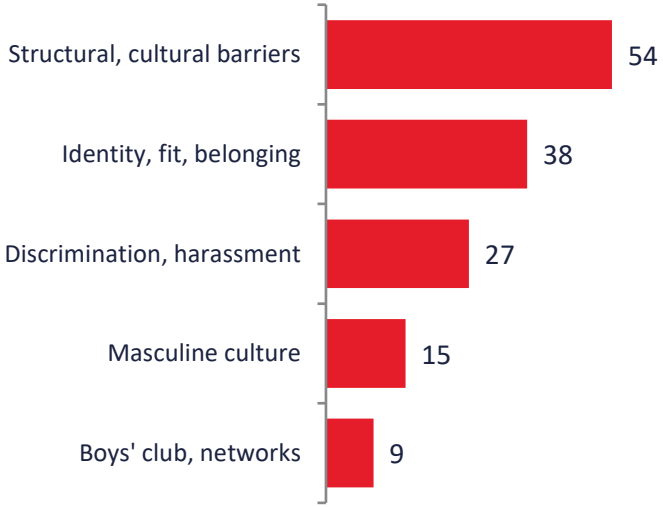
Not Australian

None of the 15 abstract-reviewed studies is Australian.

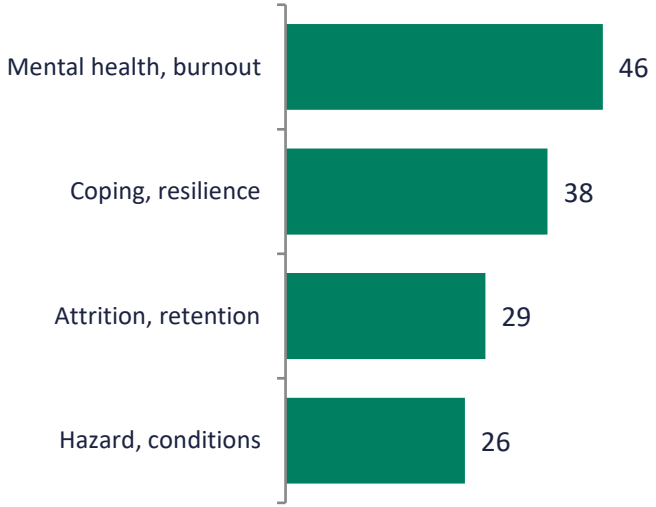
Results: breadth of the literature

Barriers and wellbeing dominate titles; boys' club research is sparse

Exposures in titles (n = 167)



Outcomes in titles (n = 167)



Title-level keyword coding of all retained records; one record can carry several codes.

Discussion: three core arguments

Hazards and identity work are linked: one responds to the other

Hazards need historical context

Psychosocial hazards are managed like physical hazards, but for women they sit within a history of discrimination and disempowerment.

Positive duty must become culture

Prevention duties only work if they change workplace culture; equality policy alone did not remove gendered challenges for Swedish police women.

Identity outcomes follow hazards

Distancing appears as a coping response to identity threat, and it carried costs for wellbeing and motivation (Veldman 2021).

Discussion: interpreting with frameworks

Existing frameworks explain the patterns, but evidence is associational

Lack-of-fit model

Contest cultures erode fit, engagement and retention.

Hegemonic masculinity

Contest cultures lower women's status and trigger distancing.

Psychological safety

Supervisor support builds safety and lowers turnover intent.

Social identity theory

Identity threat raises belonging concerns and distancing.

Three of four framework examples come from cross-industry studies outside the plan's criteria.

Discussion

Plausible, untested

- Everyday identity threat may accumulate into chronic hazard exposure
- Distancing may trade belonging for acceptance in high-risk teams
- Mandates may change reporting, not subculture

What would test them

- Longitudinal studies linking hazards, identity strategies and wellbeing
- Evaluations of positive-duty implementation
- Measures of masking and identity censorship

Discussion: implications

Treat gendered culture as a psychosocial hazard, not a diversity metric

Register the hazard

Treat harassment and hostile climate as psychosocial hazards.

Make duty cultural

Turn positive duty into daily behaviour, not a tick-box.

Train supervisors

Build psychological safety through frontline supervisors.

Measure culture

Track climate, burnout and intent to stay, not only incidents.

Evaluate mandates

Test whether Australian mandates change practice.

Select fairly

Monitor adverse impact and retention in selection, e.g. ATC.

Limitations and recommendations

Three limitations matter most; research gaps are method and design

Limitations

- One reviewer
- 7 of 15 studies outside the plan's criteria
- English and western-lens criteria narrow generalisability

Research gaps

- Two reviewers in Covidence; report inter-rater reliability
- Longitudinal and intervention designs
- Evaluate positive-duty implementation

Takeaways for safety industries

Manage gendered culture as a psychosocial risk, not a diversity metric

Register the hazard

List harassment and hostile climate on the hazard register.

Train supervisors

Build psychological safety through frontline supervisor capability.

Measure culture

Track climate, fit, burnout and intent to stay, not only incidents.

Back women up

Positive feedback and peer networks; fewer authority challenges.

Fix conditions

Secure work, safe sites, work-life flexibility.

Support high-trauma roles

Trauma and alcohol support for women in police and military.

Selection in air traffic roles

Inferences only: no air traffic study was in the evidence reviewed

Monitor adverse impact

Check pass rates and prediction by gender; test reweighting.

Avoid biased fit

Define fit by role skills, not masculine norms that raise turnover intent.

Judge by retention

Track progress, burnout and intent to stay by gender through training.

Prepare supervisors

Build instructor support and psychological safety before candidates arrive.

Assess transparently

Structured criteria, positive feedback, women on panels where possible.

Protect in training

Put academy and control-room climate on the hazard register.

Key takeaways

1. Culture shapes wellbeing and retention

Harassment, hostile climate and masculinity contest culture link to depression, burnout and intent to leave.

2. Hazards and identity work are linked

Harassment, trauma and weak support appear alongside distancing and lower wellbeing; the evidence is associational.

3. Support is evidenced; policy is not

Supervisor support and prevention have evidence; no abstract evaluated the new mandates or any intervention.

4. Individual coping is not enough

Distancing from other women carries costs; supervisor support and psychological safety are better supported.

5. Safety industries can act now

Treat gendered culture as a psychosocial hazard: register it, measure it and equip supervisors.