

This research aims to investigate how individuals can remain cognitively resilient across different challenges (e.g. harsh environmental conditions, sustained mental workloads and psychological pressures)

By assessing the wide scope of traits, skills and characteristics that make every soldier unique.

FORCOMD define resilience in a military context as the capacity of individuals, teams and organisations to adapt, recover and thrive in situations of risk, challenge, danger, complexity and adversity.

Focussing on the individual, resilience is associated with resistance to, and recovery from stressful events.

We seek to complement the Commanders' Guide by examining resilience in a performance setting, specifically the resilience of cognitive functioning in response to difference challenges.

The term cognition is broad, so – informed by our reviews and conceptual framework – we have chosen to focus on **cognitive control**.

Cognitive control is the process, or capacity, by which individuals manage goal-orientated behaviours against habitual tendencies, and is required when attentional demands are in excess of what can be maintained by an automatic process.

A wide array of activities require cognitive control, meaning that any findings relating to this project should be applicable across a number of settings. Tasks requiring cognitive control also appear particularly sensitive to deterioration under stress.

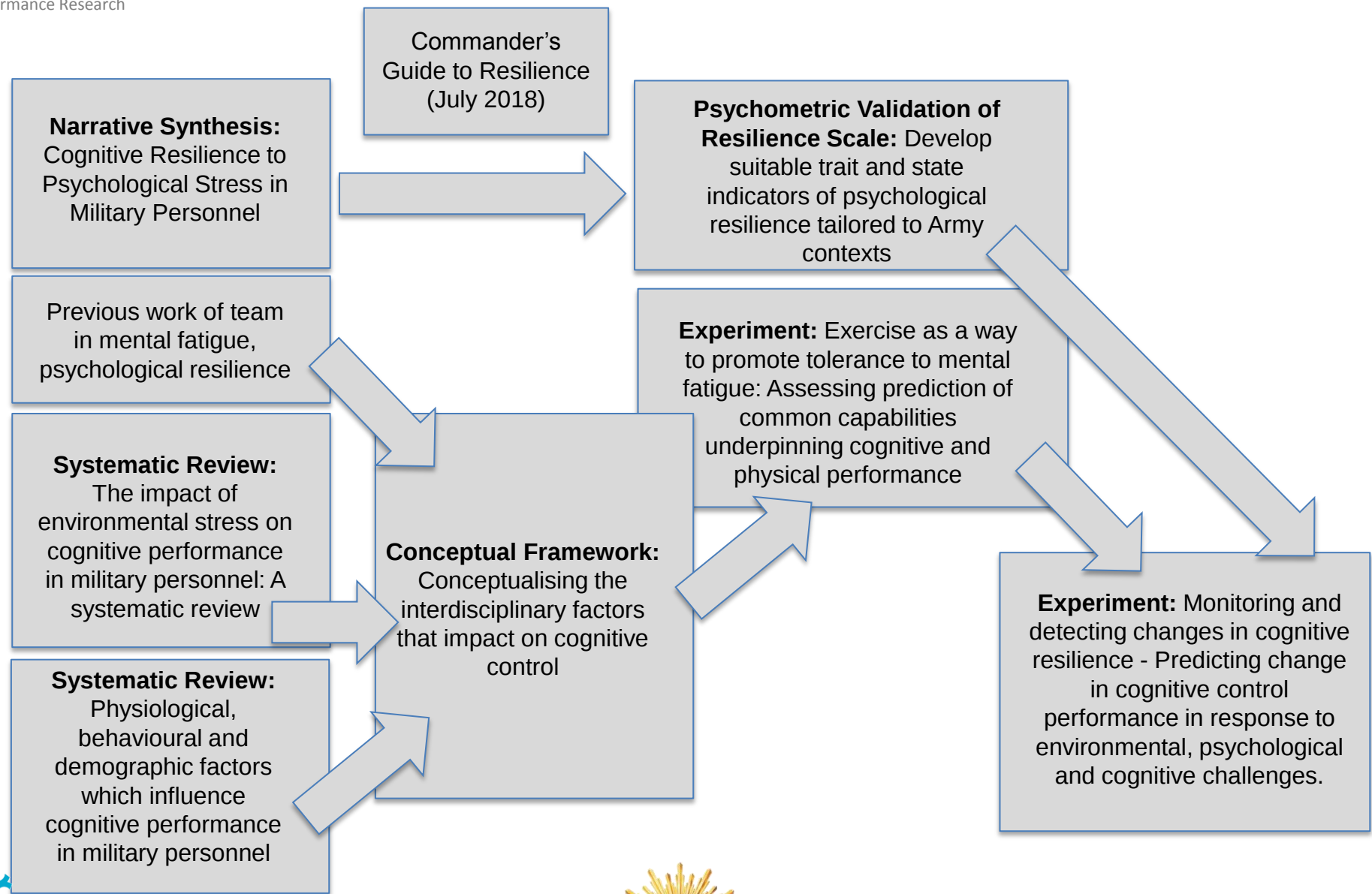
- Two systematic reviews of physiological factors influencing cognitive performance (environmental and internal)
- Narrative review of psychological factors associated with cognitive resilience
- Conceptual framework position cognitive control as a key regulator of both physical and mental performance
- RCT evaluating the effects of using exercise training to enhance cognitive control
- Development and validation of a psychometric scale to assess state and trait resilience, as appropriate for Army
- Modelling the ability to resist decrements in performance following stress (physical, cognitive and psychological)



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An integrated approach to understanding cognitive resilience in response to stress

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An integrated approach to understanding cognitive resilience in response to stress

1 Hypotheses

- Close relationships between physical traits and cognitive performance (i.e., integrated – see also Marcora / Meussen)
- Physical training will reduce mental fatigue on a sustained cognitive control task
- Psychometric properties of trait resilience will contain physical, cognitive, psychological and metacognitive components
- Different forms of stress/challenge will generate distinguishable impacts on subsequent cognitive control performance (as well as some similar effects)

2 Experimental methodology

- RCT 6 weeks of training versus control in restricting the 'drop off' of performance during sustained cognitive tasks
- Psychometric validation – item development, EFA+CFA with civilian population, convergent and discriminatory validity with Army personnel
- Counterbalanced RCT examining short term resilience of cognitive performance following acute physical, cognitive and psychological challenges

3 Deliverables

- 4 papers under review (reviews and conceptual framework)
- Explicitly re-scoped in recent months in response to recent developments – psychometric validation is the outcome of that
- 3 remaining studies
 - Impact of exercise training on cog. Performance
 - Psychometric validation
 - Cog. Performance following acute stressors (phys / cog / psychol.)

4 Timelines

- Exercise training study: End Feb 2019
- Psychometric validation: End Sept 2019
- Cog. responses to challenges study: End Feb 2020
- Final Report: April 2020



Progress, challenges, lessons learnt, opportunities, insights

Review papers form clear grounding and establish current knowledge in this topic

Informing questions developed for study –

- (a) role of exercise;
- (b) measurement of psychological resilience versus cognitive resilience;
- (c) different forms of acute challenge;
- (d) focus on acute resilience of cognitive performance to acute stressors

Personnel are key

- Changes to our staffing generated significant challenges in late 2017 and early 2018
- Finding new contributors was critical
- Excellent people tend to be in high demand...

Relationships and dialogue are key

- In those difficult moments, we (I) tended to go quiet, rather than asking for help
- Many folks in DST and Army willing to help – as above, they're busy so persistence may be required

Early ambitions tempered – realistic program going forwards

Balancing scientific and pragmatic priorities – what 'sells' in one context may not in the other

'Responsive' versus weak/uncertain – balance sought on this: opportunity to re-scope and increase impact

New opportunity remains to collaborate, particularly around the convergent and discriminatory validity of the emerging measures

