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**Team Resilience Emergence: Perspectives and Experiences of Military Personnel Selected
for Elite Military Training**

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1 **Abstract**

2 We conducted a longitudinal (3-month) qualitative study to examine elite military personnel's
3 (N=32) experiences and perspectives of team resilience emergence following two team-oriented
4 training courses within an 18-month high-stakes training program where personnel are required
5 to operate in newly formed tactical teams for extended periods. Our thematically informed
6 interpretations of the participants' subjective experiences of reality were constructed according to
7 five key themes: (i) adversity is an enduring, shared experience of an event; (ii) individuals
8 recognise adversity through physiological and/or behavioural states; (iii) self-regulatory skills
9 underpin individual performance, yet social resources bind them together to set the foundation
10 for team resilience; (iv) shared experiences of adversity and collective structures strengthen
11 social bonds and mental models needed for resilience emergence; and (v) behavioural processes
12 and shared states are how individual and team capacities are translated into performance under
13 adversity. These findings provide novel insights that supplement our current understanding of
14 team resilience emergence, including the varying means by which adversity may be collectively
15 experienced, synergies between specific forms of adversity and resilience processes or protective
16 factors, and the unique influence of performance context (e.g., task type).

17

18 Keywords: adversity, contagion, group dynamics, situation awareness, temporal dynamics, trust.

19 **Team Resilience Emergence: Perspectives and Experiences of Military Personnel Selected**
20 **for Elite Military Training**

21 Teams represent critical building blocks of organisational success across many industries
22 (Salas et al., 2018) who are often exposed to experiences of major stressors or adversities that
23 pose threats to their optimal functioning. Sustaining or bouncing back relatively quickly to
24 optimal levels of collective functioning following adversity exposure, that is, displaying
25 emergent team resilience, has intuitive and practical appeal (Gucciardi et al., 2018). Scholarly
26 work on team resilience has gained traction in recent years (Chapman et al., 2020; Morgan et al.,
27 2017), resulting in enhanced understanding of key determinants and the processes by which such
28 factors foster team resilience emergence (Bowers et al., 2017; Gucciardi et al., 2018; Stoverink et
29 al., 2020). Nevertheless, no empirical research has yet been directed towards examining the
30 validity of these conceptual expositions of hypothesised determinants and processes with teams
31 undergoing stressful experiences. We addressed this gap by conducting a longitudinal, qualitative
32 investigation of team resilience emergence in a sample of personnel who were undertaking elite
33 military training.

34 **Team Resilience Emergence: A Brief Snapshot**

35 As might be expected for a new area of research (Chapman et al., 2020), scholars have
36 defined team resilience in varying ways (e.g., capacity of a team, Glowinski et al., 2016;
37 psychosocial process, Morgan et al., 2013); nevertheless, most contemporary scholars define
38 team resilience as an emergent property of a team's inputs and processes (Bowers et al., 2017;
39 Hartwig et al., 2020). We subscribe to the definition of team resilience as "an emergent outcome
40 characterised by the trajectory of a team's functioning, following adversity exposure, as one that
41 is largely unaffected or returns to normal levels after some degree of deterioration in

42 functioning” (Gucciardi et al., 2018, p. 735). Defining team resilience as an emergent outcome
43 alleviates limitations of capacity and process-based definitions, such as a reliance upon the
44 inferred positive functioning of a team in the context of adversity and ambiguity surrounding the
45 necessary and sufficient characteristics distinguishing related concepts (e.g., adaptation). This
46 definitional perspective aligns with recent calls to reconceptualise resilience as an emergent
47 outcome of a system’s trajectory of functioning (e.g., Kalisch et al., 2017). In taking stock of past
48 work, Gucciardi et al. (2018) proposed a multilevel conceptual model of team resilience
49 emergence including nine propositions that capture the essence of this phenomenon (see Figure
50 1). Conceptual (Hartmann et al., 2020; Hartwig et al., 2020; Stoverink et al., 2020) and empirical
51 work (e.g., Karlsen & Berg, 2020; Talat & Riaz, 2020) has supported several elements of their
52 model of team resilience emergence. However, the usefulness of this model in its entirety as an
53 explanation of key conceptual building blocks and their interrelations for understanding the how
54 and why of team resilience emergence remains empirically untested.

55 **Theoretical Contributions**

56 We offer three key theoretical contributions to the literature on team resilience. First, we
57 evaluate within a military context the practical relevance of these nine core propositions and their
58 integration for characterising team resilience emergence (Gucciardi et al., 2018). This
59 contribution is important because these conceptual propositions of team resilience emergence
60 were assembled from literatures fragmented across diverse scientific disciplines (e.g.,
61 psychology, organisational behaviour) and occupational contexts (e.g., Defence, medical). In so
62 doing, we examine the scientific utility of a conceptual exposition of team resilience emergence
63 (e.g., conceptual boundaries) via an appreciation of the degree to which the conceptual building
64 blocks and their interrelations reflect organisational realities (Hambrick, 2007). This contribution

65 also has broader implications for the field of team resilience; scholars have proposed several
66 conceptual expositions of team resilience (e.g., Hartwig et al., 2020; Stoverink et al., 2020),
67 despite a limited body of empirical work (Chapman et al., 2020), so there is an urgent need for
68 examinations of their practical relevance.

69 Second, we provide a contextually and temporally rich description and interpretation of
70 team resilience emergence that sheds light on the interplay between the conceptual building
71 blocks and how they unfold over time within the context of high-stakes military training
72 characterised by substantial demands and challenges spanning several months. Context is an
73 essential feature of theory development and evaluation in the organisational sciences, yet
74 something that is often overlooked and therefore has the potential to perpetuate incomplete
75 theoretical expositions of organisational phenomena (Johns, 2006; Whetten, 2009). This
76 contribution is needed because of the reliance in past work on cross-sectional snapshots of team
77 resilience where protective factors and processes are considered largely in isolation from the
78 stressors or adversities that trigger the dynamic emergence (Chapman et al., 2020). High-stakes
79 occupational domains such as the military represent ideal contexts in which to study team
80 resilience emergence because adversity is prevalent in both training and operational contexts. We
81 focus on military personnel selected for elite military training in the current study because
82 training typically prioritises the systematic input of adversity for testing the capabilities of
83 individuals and collectives. The key question of “resilience to what” can therefore be examined
84 with precision and consistency across multiple phases of a training program.

85 Third, we focus on newly formed teams at the early stage of their life-cycle to afford
86 understanding of the critical inputs and formative processes at play during team resilience
87 emergence. Team type considerations for team resilience emergence are inevitably influenced by

88 the team's development stage (Gersick, 1988). Research on team resilience thus far has typically
89 studied mature or established teams (Furniss et al., 2011; Morgan et al., 2015) often in the
90 absence of specific knowledge of adversity events. Newly formed teams are ideal for
91 examinations of emergent phenomena as opportunities to observe emergent processes may be
92 rife within the early stages of the life-cycle, relative to established teams where these processes
93 may have already occurred (Allen & O'Neill, 2015). Thus, observation of newly formed teams
94 during their early stages of formation represents a unique vantage point upon which to explore
95 team resilience emergence and to provide an insight into the amount of time required for this
96 emergence process to occur that would be largely inaccessible within established teams.

97 **Present Study**

98 Maximising synergies between concept and method are essential for knowledge
99 advancements on team resilience emergence. We align concept and method via a longitudinal
100 approach that permits insight into the emergence process via exposure to multiple adversities. In
101 so doing, we explored the experiences and perspectives of personnel selected for elite military
102 training from a larger pool of candidates regarding team resilience emergence, specifically
103 regarding two training courses across an approximately 4-5 month period within an 18-month
104 training program.

105 **Methods**

106 **Philosophical Standpoint**

107 We adopted an interpretivist paradigm whereby our understanding of participants'
108 perspectives and experiences was grounded in socially and experiential personal interpretations
109 of our team (Malterud, 2016). Our ontological view is underpinned by a relativist approach in
110 which reality is multiple and indistinguishable from people's subjective experiences of the world

111 (Nicholls, 2009). To understand the subjective nature of reality and multiple truths, we adopted a
112 constructionist epistemological perspective, whereby knowledge was acquired through the co-
113 development of meaning between the participants, researchers, and their relationship in a social
114 interaction (Malterud, 2016). Inherent within this approach is the notion of research reflexivity
115 over objectivity, and an acknowledgement of the researchers' influence within the research
116 process. In other words, the findings reported here represent our interpretations of the
117 participants' subjective experiences of reality.

118 **Sample and Context**

119 We conducted this study within the context of elite military training, namely a sample of
120 Australian military personnel who were undertaking training to become qualified Special Forces
121 operators. Candidates must first complete a multi-week selection course that tests their physical
122 and mental abilities and replicates the demands of operational environments. The pass rates on
123 these courses are relatively low (e.g., in the vicinity of 20%; Gucciardi et al., 2015; Gucciardi,
124 Lines, et al., in press). Consequently, each year only a select ('elite') group of personnel will
125 progress onto Special Forces training. This training is conducted over approximately 18 months
126 during which time candidates must demonstrate the required performance standards on all
127 components to pass the program and qualify for entry into Special Forces units. Candidates must
128 demonstrate proficiency in a broad range of tasks such as basic patrolling, roping, parachuting,
129 close quarter combat, demolitions, signals, and combat first aid. The course requires individuals
130 and teams to learn complex skills within a finite period and demonstrate these skills during
131 activities that are representative of special operations missions. Throughout this training,
132 candidates are exposed to numerous acute and chronic stressors including having to: (i)
133 assimilate new information when fatigued; (ii) acquire new skills within a defined period; (iii)

134 make decisions and complete tasks under time pressure; (iv) meet performance standards at all
135 times; (v) experience constant uncertainty about whether one will be selected at the end of the
136 course; (vi) work in austere conditions (e.g., extreme weather, high altitude, variable terrain,
137 minimal food and sleep) for extended periods; (vii) perform at a high level with limited
138 opportunities for rest and recovery; (viii) be away from home/family; and (ix) complete tasks
139 involving major safety risks (e.g., firing live ammunition). Collectively, exposure to such
140 different adversities, situated within a program that requires individuals to work in teams on
141 tasks that emulate real-world job demands, makes the course a useful context to study team
142 resilience emergence.

143 We focused on military personnel who were completing elite Special Forces training
144 because their program represents an ideal context for our scholarly goals. First, teams are critical
145 to Special Forces missions; typically, personnel will operate in small teams of 4-8 members who
146 work together for extended periods and often without direct support to achieve mission
147 objectives. The training program focuses on identifying individuals who have the potential to
148 excel as part of a small team and equipping them with the requisite knowledge, skills, and
149 abilities to do so. Second, team composition within the Special Forces training program is
150 dynamic, whereby teams are newly formed towards the start of each training course, in part due
151 to membership changes throughout the overall 18-month program (e.g., candidates removed for
152 not meeting the required standards, teams strategically recomposed for assessment purposes).
153 This contextual feature meant team composition changed considerably between each data
154 collection point, yet teams were recomposed of members of the same overarching training cohort
155 and changed minimally between courses. These changes in team composition afforded an
156 opportunity to explore the development of shared realities after multiple experiences of forming

157 new teams and thus experiencing ‘swift’ resilience emergence within the boundaries of a specific
158 organisational context. Third, adversity is a characteristic feature of the training program for the
159 entire 18-months; candidates must complete a variety of physically and mentally demanding
160 scenarios that are indicative of those required during actual special operations missions.
161 Although adversity is present throughout the entire course, our discussions with the training staff
162 identified two critical points in the program which they believed were ideal opportunities to
163 collect data for our study. These two points were at the completion of the patrol course and close
164 quarter battle training modules; these two were specifically chosen because they involve having
165 to learn complex skills, working effectively as a team, operating in austere and dangerous
166 conditions, and are typically regarded by training staff as the most challenging courses for
167 candidates to perform well on. These ‘adversity touchpoints’ provided a necessary backdrop
168 upon which to generate a contextualised understanding of the temporal dynamics of team
169 resilience in an ecologically rich way.

170 We sampled participants for this study from one of the annual intakes of candidates
171 undergoing Special Forces training within the Australian Defence Force. Our research team
172 tracked these teams for 12 months prior to data collection as part of a larger project (e.g., self-
173 reported surveys, physiological assessments of stress) and so were familiar with our research
174 team and the nature of the work. Most personnel from this annual intake consented to participate
175 in this study ($N = 32$ males; $M_{\text{age}} = 26.25 \pm 2.62$ y); these personnel made up eight and seven teams
176 at time point one and two, respectively. Participants’ prior experience in Defence varied
177 (6.87 ± 2.28 y) and included non-officers (e.g., Corporal, Warrant Officer; $n=27$) and officer ranks
178 (e.g., Captain, Major; $n=5$).

179 Procedure

180 We received approval from a nationally accredited human research ethics committee prior
181 to data collection. We adopted a longitudinal qualitative design to explore shared perceptions of
182 team resilience via group interviews, and the temporal dynamics of these perceptions at two
183 points, 3-months apart, within the context of an 18-month military training program. In total, we
184 conducted seven group interviews across two time points (T1: 4 focus groups, 32 participants
185 and T2: 3 focus groups, 24 participants). We collected data following two separate training
186 courses deemed to contain the necessary richness and degree of challenge to potentiate key
187 transformations within teams to permit explorations of the evolution of retrospective
188 perspectives regarding team resilience emergence (Kozlowski et al., 2013). The initial wave of
189 data collection occurred following participants' first significant exposure to a team-based training
190 course within their 18-month program, prior to which activities primarily involved the upskilling
191 of individual based competencies. The focus groups were conducted in a seminar room located
192 on a military base. The composition of these focus groups varied at each time point for logistical
193 reasons, though each group typically included personnel from 1-3 teams (4-15 members); we
194 always included personnel from the same teams for logistical (e.g., personnel from the same
195 team performed training activities on the same schedule) and substantive reasons (e.g., personnel
196 are best positioned to comment on collective dynamics in their own team). Focus group
197 discussions, which ranged from 30 to 42 min (35 ± 4 min), were conducted using the same semi-
198 structured interview protocol that was informed by conceptual work on team resilience
199 emergence (Gucciardi et al., 2018; see supplementary material). The main differences in the
200 focus group discussions between time points related to the types of probes we used to encourage
201 participants to consider the temporal dynamics (e.g., how has [response] changed since last time

202 we spoke?). We guided the conversation to examine participants' perspectives of adversities
203 experienced during the training program and expectations of future adversities in the program,
204 and key individual- (e.g., personal resources) and team-level (e.g., coordination, norms)
205 determinants of team resilience emergence. Nevertheless, we welcomed participant driven
206 deviations from this schedule to maximise authenticity and leverage group dynamics within the
207 discussion. Due to the collective nature of the conversation, the interviewer adopted a facilitator
208 approach where possible to allow group conversation to dominate and opportunities for
209 agreement or conflict to occur (Bohnsack, 2004). Audio recordings of focus group discussions
210 were transcribed verbatim prior to data analysis, with a total of 46,269 words spoken.

211 **Data Analysis**

212 MC conducted the data analysis, with the support of DG who has substantive expertise on
213 team resilience and contextual knowledge of the military unit and Defence. Both analysts met
214 virtually and in person on several occasions during the data collection and analysis process to
215 discuss critically and reflexively their interpretations of the participants' discourse and determine
216 how best to illustrate the social construction of these unique perspectives. We adopted an
217 abductive approach to data analysis (Sparkes & Smith, 2014), whereby we examined
218 participants' perspectives in accordance with the guiding conceptual framework of team
219 resilience emergence (Gucciardi et al., 2018), yet remained open to new themes or ideas that may
220 disconfirm these preconceptions or reflect them in unique ways.

221 We initially coded data at each time point separately in line with Braun and colleague's
222 (2016) six stages of thematic analysis with the use of NVivo software (QSR International Pty
223 LTD, 2010): (i) reading and re-reading of interview transcripts and audio recordings; (ii) creating
224 basic, data and theory driven nodes; (iii) grouping of initial nodes through the use of thematic

225 maps; (iv) collaborative checks of the codes, themes, and entire dataset; (v) identifying the
226 essence and boundaries of each theme; and (vi) producing the report. We considered both
227 semantic (i.e., explicit meaning from expressed statements, akin to the tip of an iceberg above
228 water) and latent (i.e., implicit meaning via interpretation of ideas and meanings, akin to the base
229 of an iceberg below the water level) details for the development of themes (Braun & Clarke,
230 2019). Thus, we actively created themes to “reflect patterns of shared meaning underpinned or
231 united by a core concept” that characterise participants’ experiences and perspectives on an
232 interpretive story concerned with team resilience emergence (Braun & Clarke, 2019, p. 5).

233 In line with the recurrent cross-sectional approach to longitudinal analysis of qualitative
234 research (Grossoehme & Lipstein, 2016), we compiled data for each overarching theme across
235 individual matrices to analyse the frequency and nature of responses across time. Specifically,
236 we mapped themes constructed within the cross-sectional analysis across time for the full cohort
237 of participants (see supplementary material). From these matrices we inductively constructed
238 themes from the raw coded information that reflected the nature of data at each time point. We
239 then examined patterns of consistencies or changes between the two phases including absence of
240 information to create temporal themes that characterise the dynamics of perceptions across time.
241 This approach was adopted to allow insight into the evolution of participants’ perceptions
242 surrounding team resilience emergence following repeated experiences of performing within
243 newly formed teams who were exposed to adversity.

244 **Methodological Rigor**

245 Consistent with a relativist ontology, we adopted several criteria to judge the quality of
246 the research (Burke, 2016). First, the worthiness of the topic was informed by a recent literature
247 review (Chapman et al., 2020) and conceptual exposition of team resilience emergence

248 (Gucciardi et al., 2018), and priorities of the key stakeholder (Commonwealth of Australia,
249 2016), such that our work reflected a nexus between substantive and practical importance.
250 Second, rigor was maximised through the adoption of a longitudinal sampling approach, and the
251 uniqueness and relevance of the sample for the purpose of the study (Tracy, 2010). Third, we
252 addressed credibility via ongoing engagement with participants and other key personnel in the
253 unit (e.g., training staff) in the 12 months prior to the first focus groups, command approval and
254 support for the project, and team composition (e.g., mix of academic and Defence scientists).
255 Finally, reflexivity is a logical contrast to objectivity and holds important value in the
256 transparency of qualitative research (Malterud, 2016). This transparency was developed through
257 a reflexive awareness of personal assumptions, values, and commitments of the researchers
258 involved in data collection and analysis. One co-author acted as a “critical friend” (Sparkes &
259 Smith, 2014, p. 182) for the lead analyst, with the view to evaluate the data collection and
260 analysis iteratively, and provide a sounding board during the analysis (e.g., challenge
261 assumptions or interpretations, offer alternative viewpoints). **Relatedly, given the conceptual
262 inconsistency between reflexive thematic analysis and saturation (Braun & Clarke, 2021), we
263 prioritised information power or richness of participant knowledge as the most suitable metric
264 for the sufficiency of our analysis.**

265 **Results and Discussion**

266 **Contextual evidence of emergence**

267 We based our inference of team resilience emergence across the two training courses
268 according to two key pieces of contextual information. First, participants discussed the
269 progressively challenging nature of the two training courses, and the requirement for successful

270 teams to maintain or quickly recover functioning in response to adversities embedded within the
271 courses:

272 Your training just accumulates and your tasks get more complex. You're going from like
273 a zero skill level at the start when this patrol is all together to more complex...towards the
274 later stage of the course, then things were getting a bit more hectic to that, some of those
275 variations [in performance between teams] came out. [Time point 2]

276
277 Team members seemingly demonstrated a perceived growth in capacity to face stressful
278 situations following the successful completion of courses. The competitive nature of these
279 training courses also meant that teams who insufficiently demonstrated resilient performance
280 following exposure to adversities were likely to be unable to complete training courses and likely
281 incurred the removal of group members from the course. In other words, our sample were
282 ultimately successful in utilising collective resources to navigate the individual and collective
283 challenges embedded within the course.

284 From the training leading up to it, we just dealt with stressors the whole time so that
285 we've kind of grown accustomed to it a little bit, that's helped them get through. Because,
286 like it's not really that bad. I know we can dust this off and keep going if we mess up.
287 [Time point 2]

288
289 I don't think there's been an adversity we've faced so far that's been so overwhelming
290 that we haven't been able to cope. We've been able to work together and overcome it
291 almost pretty instantaneously and then crack on. Work out the causes for it so it doesn't
292 happen again, and then carry on. [Time point 1].

293
294 Second, participants paid attention to the need for teams to demonstrate resilient trajectories of
295 functioning. Participants discussed their experiences of witnessing teams unable to progress
296 through the course when these trajectories were inadequate:

297 Yeah, in other groups, there was definitely times that they were double-checked (i.e.,
298 reprimanded or 'looked after' or taken away from the course) to a point if they weren't
299 [performing successfully]. [Time point 2]

300
301 These participant perspectives, coupled with the contextual understanding of the content and
302 assessment of course performance, demonstrates support for the assumption that collective

303 functioning within these newly formed teams resembled contextually desirable trajectories
304 following exposure to progressive adversities (for other examples, see Galatzer-Levy et al., 2018;
305 Gucciardi, Lang et al., in press). Against this contextual backdrop, we created five overarching
306 themes from our thematic analysis of the two waves of interview data to summarise participants'
307 experiences and perspectives of team resilience emergence (see Figure 2).

308 **Adversity is an enduring, shared experience of an event**

309 Adversity is central to the science of resilience because such events provide essential
310 knowledge of 'resilience to what'. Participants outlined a broad range of adversity experiences
311 that varied in magnitude (e.g., degree to which the situation might destabilise homeostasis),
312 frequency (e.g., once off or enduring), source (i.e., internal or external to the team),
313 controllability (i.e., degree to which the team can control or influence an adversity), and the
314 nature of sharedness (i.e., experienced simultaneously or concurrently by all members or
315 progressively transferred from one member to others). In essence, adversity discussed within this
316 context reflected a breadth of typically enduring, shared experiences that were underpinned by
317 the desire to perform successfully over time.

318 Previous work has characterised team resilience as involving a shared experience of
319 adversity, describing the 'collective encounter' of such experiences (Morgan et al., 2013).
320 Participants discussed several examples across both time points that captured the 'sharedness' of
321 adversity experiences in two unique ways via (i) convergent and (ii) complementary linkages.
322 Regarding convergent linkages, participants referred to the common perceptions among team
323 members, such as a shared physical demand or a change in task complexity for the team. This
324 commonality characterised experiences that were instantly mirrored across teammates regarding
325 physical exhaustion:

326 During our patrol course we had a shared adversity in that there was some pretty s**t
327 terrain that we were going through and everyone's physically taxed and that makes it a bit
328 harder when you've got to make decisions. [Time point 1]

329
330 The second description of shared experiences of adversity captured instances where one

331 or more but not all team members directly experienced adversity with or without the awareness

332 of other team members. Although some team members did not experience such adversities

333 directly, participants acknowledged a 'flow on effect' for team functioning as a shared adversity

334 because of the common bonds (e.g., collective objectives).

335 So, I think everyone would, if something happened, being that someone went down, with
336 heat or whatever happened, and that was considered an adversity by one person the whole
337 group would have the same mentality towards that. So someone getting injured, everyone
338 immediately knows, especially if you work in a small team, but this is an issue you need
339 to get on straight away. [Time point 1]

340

341 It was evident in the participants' discourse that adverse events experienced by some but not all

342 members progressively transferred to other members via a contagion effect (Barsade, 2002). By

343 and large, the shared nature of such adversities was underpinned by a type of emotional

344 contagion acting upon team members. Emotional contagion, defined as the "process by which a

345 person or group influences the emotions or behaviour of another person or group through the

346 conscious or unconscious induction of emotion states and behavioural attitudes" (Schoenewolf,

347 1990, p. 50), occurs via several key processes. The examples of shared experiences described

348 above are indicative of two such processes; the former of convergent linkages, whereby

349 individuals share the same vantage point *and* interpretations of the same stimulus, and the latter

350 of complementary linkages, whereby the reactions of one person are the stimulus for emotional

351 contagion (Elfenbein, 2014). The key distinction is the perspective from which members

352 experience and appraise an event. Convergent linkages typically result in situations where

353 members experience a similar affective state, whereas complementary linkages lead to diverse

354 emotional experiences (Elfenbein, 2014). Congruency in affective states among team members,
355 whether positive or negative in valence, are considered reflective of a shared team identity (e.g.,
356 Magee & Tiedens, 2006; van Kleef & Fischer, 2016). Shared positive emotional states in
357 collectives in/directly affect group effectiveness, yet the effects of negative affective states
358 appear contextually dependent (Barsade & Knight, 2015). For example, the coordination of a
359 team's affective state via complementary linkage may be beneficial to performance (e.g.,
360 optimising team arousal to deal with a threat or significant challenge) or detrimental (e.g.,
361 spreading of anxiety among team members) depending on the nature of the performance context
362 and team dynamics.

363 The length of exposure is another key consideration for the characterisation of adversity
364 (Cohen et al., 2019; Luhmann et al., 2020). Individuals spoke to several challenges that were
365 considered adversities because of their pervasive nature across the entire course, particularly
366 situations of continued assessment or long-term physical discomfort:

367 Many of us had pressure to perform. So constantly judged and watched on everything
368 from like your kit layout, how everything was set up, to having your mag load-out, to
369 how you were performing. That was probably the biggest stressor... I think everyone
370 could agree that was like the biggest, yeah, factor to show resilience in a team and
371 individual. That was like the biggest thing, I'd say. [Time point 2]

372
373 Chronic stressors appear most damaging due to the increased chance of exposure being present at
374 a point of vulnerability for that system, permanent changes in the state of system that may have
375 knock on effects, and increased wear and tear (i.e., allostatic load) on the system (Cohen et al.,
376 2019). The availability of collective coping strategies to deal with such adversities is crucial for
377 minimising potential risks when confronted with adversities of an enduring nature. Numerous
378 inputs and mediators have been discussed in previous work on team resilience (Bowers et al.,
379 2017; Gucciardi et al., 2018; Morgan et al., 2019), yet often absent of any consideration of the

380 varying nature of adversity experiences. Time is a critical consideration for the science of team
381 resilience because inferences regarding emergent resilience can be made only within the context
382 of a system's trajectory of functioning in response to adversity (Gucciardi et al., 2018). Although
383 elements of duration dominated the discussion of adversities here, we cannot ignore the
384 importance of features related to the frequency, timing, and sequencing of events that represent
385 heightened risk or vulnerability for advancing knowledge on team resilience emergence (e.g., see
386 Aguinis & Bakker, 2020).

387 **Temporal analysis.** Consistencies across time were evident regarding the shared nature
388 of adversity experiences and the persistence of uncertainty across the training context. Exposure
389 to shared adversities and the withholding of task-relevant information resembled core strategies
390 utilised by training staff to challenge teams over both training courses. Despite consistencies
391 across the training courses, unique challenges were also faced by participants at each time point.
392 Notably, these differences encompassed changes in the length of exposure to adversity and the
393 sources of adversity. Although chronic exposure to adversity was common among participants'
394 reflections over both time points, repeated bouts of acute challenges were discussed primarily at
395 time point two in contrast to the ongoing nature of adversity most prominent at time point one.
396 Specifically, the repeated pressure to acquire and demonstrate complex team skills was
397 commonly discussed at time point two in comparison to the continued physical challenges
398 prominent at time point one.

399 All the [simulated] close quarter battles. So, it's instantaneous decisions that need to be
400 made, and those decisions essentially do mean life and death when you're doing a
401 [mission]... So knowing the complexity [the challenges include] introducing all these
402 skills, more enemy. [Time point 2]
403

404 These individual variances are reflective of the changes in nature of tasks conducted across the
405 two time points and demonstrate an important contextual factor of this study.

406 Second, although discussed at time point one, participants reported ‘pressure to perform’
407 as most prevalent following the second training course. The second time point represented a
408 point after a training course within the latter stages of the 18-month training program, where
409 personnel were subjected to numerous assessments and more complex training drills. These
410 factors likely placed added emphasis upon participants’ awareness of the need to maintain
411 individual and team performance to pass the course. Collectively, these temporal nuances
412 underscore the importance of appreciating context when making inferences regarding the nature
413 of adversity experiences for team resilience emergence.

414 Variation in the perceived controllability of adversity also occurred between the two time
415 points. Participants commonly discussed adversities to be controllable following the initial
416 training course, yet when discussing adversity following the second training course responses
417 were notably absent of the controllable nature of adverse events.

418 We’ve got measures to control it [an adversity] so it doesn’t come out of control or
419 become an issue, or what others deem as an adversity, you kind of just react so it doesn’t
420 become a problem [Time point 1].

421
422 Although participants did not explicitly discuss the uncontrollable nature of adversity within the
423 second phase of data collection, the absence of data between time points has been noted as an
424 important signal of variation in perceptions within longitudinal analyses (Saldaña, 2003).

425 Coupled with perceptions of enhanced task complexity and pressure to perform, these findings
426 point to the progressive difficulty between the two courses.

427 Finally, participants’ discourse changed when describing the nature of dynamic team
428 challenges, wherein initial challenges of alterations in composition (e.g., loss/removal of team
429 member) transitioned to observations of the deleterious effects of weaker team members on team
430 functioning (e.g., mistakes or inability of individuals):

431 Having members in the patrol who were just not up to standard. And I found that it was
432 actually a big burden on our team to carry them through run-throughs and scenarios and
433 pick up the slack where they were falling off. It made people more aware, they had to be
434 more aware, they had to be more focused, more switched on. They had to think not just
435 about their role but what that person's doing also. [Time point 2]
436

437 This transition in discussion points is seemingly indicative of the more homogeneous nature of
438 the participant cohort who remained on course at time point two. Diversity across deep level
439 characteristics such as personality and ability can potentially disrupt group dynamics (e.g.,
440 intragroup conflict: Harrison et al., 2002); our findings support an interpretation of the beneficial
441 nature of uniformity between team members in the current performance domain.

442 **Individuals recognise adversity through physiological and/or behavioural states**

443 Scholars have discussed the importance of recognising adversity as a key mediator
444 (Edson, 2012) or trigger (Gucciardi et al., 2018) of team resilience emergence. Participants
445 echoed this sentiment; they discussed three key indicators of adversity outlined below and the
446 importance of recognising such indicators to optimise effective functioning in the face of these
447 experiences. Collectively, these discussions indicated that individuals recognise adversity
448 through physiological and/or behavioural states, depending on the nature of the adversity or the
449 situation in which they are embedded.

450 A team's trajectory of functioning in relation to contextualised criteria represents the core
451 marker of team performance (Salas et al., 2008). Participants referenced an awareness of threats
452 to, or deviations in, collective performance because of adversity. The following participant's
453 quote reflects an awareness of change in the progress towards the collective 'end state' or
454 objective:

455 ...everyone would be able to identify once we've deviated off that path of getting the
456 quickest way to reach the end state, essentially, and I think no matter what we do, we can
457 all pretty much identify once it's either slowing us down getting that end state, or it's
458 becoming for us, not the most favourable path essentially. [Time point 1]

459
460 Identifying deviation from the desired team end state within the context of adversity exposure
461 resembles the concept of situation awareness. Situation awareness reflects one's degree of
462 understanding of the dynamics of external environments produced by mental processes including
463 perception, memory, attention, and expectation, and the use of this information for current and
464 future goal directed action (Endsley, 1995). Individual situation awareness involves the
465 perception of environmental dynamics, comprehension of these dynamics, and projection of this
466 knowledge for future action (Endsley, 2015). Situation awareness is positively associated with
467 performance on a range of tasks such as military planning (Salmon et al., 2009), simulated in-
468 flight emergencies (Prince et al., 2007), and crash-avoidance in driving simulations (Gugerty,
469 1997). However, for complex systems, such as teams, unique insights regarding environmental
470 dynamics need to be distributed compatibly among members for effective performance (Stanton
471 et al., 2006, 2017). Deviations from expected team functioning represented a shared metric in
472 this regard, alongside other cues discussed below.

473 Individual recognition of adversity also related to internal stimuli. Participants discussed
474 an awareness of their own physiological state in response to adversities experienced as a team,
475 such as an enhanced level of activation when “you can feel when your heart rate's going up” or
476 “heart literally beating through your chest”. Physiological states provide important knowledge
477 about environmental demands, particularly during stressful situations (Appelhans & Luecken,
478 2006; Dickerson & Kemeny, 2004), which is an important first aspect of situation awareness
479 (Endsley, 2015). People's interpretations of physiological states provide an important window
480 into efficacy beliefs, particularly in situations where physical demands are high and critical to
481 task execution (Bandura, 1997). Participants also paid attention to the recognition of adversity

482 experiences via their teammates' behaviour, primarily with reference to changes in typical
483 behaviour or persona:

484 I guess you can know from their personality, if they're normally quite banterous. And if
485 they're not, they're probably struggling a bit. I mean you hear everyone laughing,
486 everyone starts losing it and wants a part of it, if that person doesn't you can sort of be
487 like, yeah, they're either behind or struggling and they need help. [Time point 1]

488
489 Contrasting these two themes suggests that indicators of stress experiences observed in
490 others (i.e., deviations from normative behaviour) were largely incongruent with self-referenced
491 markers (i.e., physiological states). Collectively, these points highlight that threats to team
492 functioning are identified across individual and collective levels. The extent to which each type
493 of indicator is most relevant likely depends on the degree of interdependence among team
494 members; collective indicators are likely prioritised when interdependence is high, whereas
495 individual markers would likely take precedence when interdependence is low (Kozlowski &
496 Ilgen, 2006).

497 **Temporal analysis.** The temporal analysis supported consistency in the recognition of
498 changes in team member behaviours or team level functioning across both time points.
499 Participants provided less emphasis upon the value of recognising changes in internal states
500 within the second wave of data collection. The limited discussion regarding the importance of
501 individual-level indicators of adversity following the second course was coupled with an
502 emphasis of recognising adversity in team member behaviours and collective functioning:

503 You could see them not wanting to be at the front, not wanting to lead, not wanting to go
504 through the door first, not wanting to take that shot. They kind of try and sink to the back.
505 It was noticeable who was always at the back and who was always at the front during the
506 run throughs. And I think that's probably the key indicator where you can tell on the team
507 who the people were that were either stressed out, nervous, when they were performing,
508 and that was the probably the key indicator. [Time point 2]
509

510 Given the variance of specific tasks and adversities experienced across the two courses, this
511 finding highlights the centrality of recognising adversity via external states as a key feature of
512 team resilience emergence that may generalise across time and contexts.

513 **Social resources bind together individual self-regulatory capacities when confronted with**
514 **adversity to support team functioning**

515 Once an adversity and its risks are identified, teams need to leverage resources that can
516 buffer the potential effects of these adversities. Consistent with past work (Bowers et al., 2017;
517 Gucciardi et al., 2018; Hartmann et al., 2020; Hartwig et al., 2020), the knowledge, skills,
518 abilities, and other characteristics (KSAOs) individual members bring with them to the situation
519 were considered key in this regard (Ployhart et al., 2014). For our participants, emotional and
520 cognitive abilities as well as technical skills were key to task performance when confronted with
521 adversity.

522 Applying self-regulatory skills to maintain individual role performance under experiences
523 of adversity was considered key to team resilience emergence in this context. Participants drew
524 upon the importance of skills that allow them to regulate their emotional and cognitive states to
525 maintain effective and efficient functioning, such as maintaining focus in response to the
526 challenge of receiving negative group feedback:

527 The ability to refocus has got to be pretty good. Day to day you're getting very positive
528 and negative feedback. If you get some negative feedback, you've got to be able to take it
529 on board and still get on with it and perform at a high level. If you don't, you put it on
530 your team, you're just going to keep slipping down a slippery slope. [Time point 2]

531
532 Participants also discussed more broadly the importance of past experiences applying self-
533 regulatory skills successfully within the context of a variety of adversities as an important
534 individual characteristic. This discussion point is unsurprising, as mastery experiences are a key
535 source of efficacy beliefs (Bandura, 1997). Participants alluded to these benefits in terms of “past

536 experience applying revision techniques” and the importance of successful experiences applying
537 regulatory skills during challenging times on the course:

538 You might just get the revision techniques and you apply it better, now that we've used it
539 and we have experience with stressors along selection. Definitely. I think, naturally you
540 just need to be able to control yourself in situations like that. Some dudes just break and
541 we're a group of dudes that have proven it and that's why we're here. [Time point 2]

542
543 Meta-analytic research supports the importance of psychosocial skills for human performance

544 (Brown & Fletcher, 2017). For team resilience emergence, it is essential that individuals can

545 access human capital resources that are relevant for collective functioning and apply them

546 effectively when confronted with adversity (Gucciardi et al., 2018). Although certain

547 characteristics (e.g., conscientiousness; Bell et al., 2018) may be broadly beneficial to team

548 functioning, context shapes the importance of individual human capital resources on collective

549 functioning. Self-regulatory skills, which have been trialled and refined via past experiences of

550 adversity, represent an important human capital resource within the context of team resilience

551 emergence in newly formed military teams. When individuals poorly self-regulate there is an

552 increased risk of spill-over effects to collective functioning (e.g., emotional contagion).

553 Individual self-regulatory skills are essential for dealing with stressors and adversities

554 regarding one's own task performance. Yet within the context of teams, there also is a need for

555 regulation of the collective, particularly regarding the social dynamics. Participants

556 acknowledged the complementary nature of these non-technical resources because they provide

557 the 'social glue' that pulls together individual members in a united front (Kwon & Adler, 2014).

558 Non-technical resources have been defined as the cognitive, social, and personal resources that

559 support effective team functioning and complement individual technical skills (e.g., weapon

560 operation; Flin et al., 2008). Consistent with previous work on team resilience in sport teams

561 (Morgan et al., 2013), participants made specific reference to the benefit of social support outside

562 of the immediate performance environment (see Figure 1). Non-technical resources have been
563 highlighted as beneficial to teams in dealing with adverse events through the reduction of the
564 occurrence of team errors (McCulloch et al., 2009), particularly where team membership may be
565 in its early stages (Flin & Maran, 2004).

566 **Temporal analysis.** Participants placed approximately equal emphasis on the importance
567 of self-regulatory skills and non-technical resources across both time points, yet the nature of
568 discussion surrounding the importance of non-technical resources reflected a more refined
569 understanding with time. Essentially, participants emphasised the importance of displaying
570 prosocial characteristics following their first training course but with subsequent experience
571 referenced the limited nature of such characteristics when faced with adversity. For example,
572 team members would demonstrate less prosocial behaviours toward members of the team when
573 they felt their performance levels had dropped past a certain point. These findings indicate the
574 adaptive nature of teams to find ways to protect collective functioning based upon compositional
575 features of the team, such as abandoning prosocial characteristics when faced with adversity. The
576 limits of prosocial characteristics were considered in relation to shared constructs such as
577 interpersonal trust or team pride. One participant discussed how trust between team members
578 would protect the importance of prosocial characteristics on a team's approach to optimise
579 collective functioning:

580 If the team trusts them, and it's just a bad day or a bad run through, possibly even a bad
581 week, then they'll get 'don't worry about it' and you'll do anything to help them get off
582 that slippery slope – to get back up to the standard. But it's just depending on when that
583 trust runs out, that's when the team might possible leave you by the wayside. [Time point
584 2]

585
586 These findings indicate the maturing perspectives of participants by highlighting the added
587 complexity regarding how teams might actively protect collective functioning. The varying

588 importance of team members' prosocial characteristics according to individual (e.g., performance
589 ability) and collective (e.g., trust) features offers unique insight into the numerous ways by which
590 resilience may emerge within complex systems.

591 **Shared experiences of adversity and collective structures strengthen social bonds and**
592 **mental models needed for team resilience emergence**

593 When describing the importance of team-level factors that underpin team resilience
594 emergence, participants spoke to the benefit of shared past experiences and team structural
595 factors (e.g., shared leadership) to support the development of social constructs (e.g., team
596 identity) and the coordination of behaviours during experiences of adversity. Thus, this theme
597 reflects an identification of initial conditions of a system based upon prior experiences of
598 adversity and organisational norms that increase the likelihood of resilient outcomes (Hackman,
599 2012). Within the context of newly formed teams, scholarly perspectives of team development
600 have changed from one of gradual movement across stages (Tuckman, 1965) to the belief that
601 teams form certain capacities shortly after formation, which hold a strong influence over group
602 dynamics up to an approximate midpoint of team performance (Gersick, 1988). Accordingly, this
603 theme is characterised by specific social and structural factors of a team that support team
604 resilience emergence from the individual level KSAOs of group members.

605 A key discussion point regarding the initial conditions of the team related to the
606 importance of past shared experiences of adversity during the early stages of team formation and
607 development. These shared experiences seemed to foster feelings of togetherness, shared
608 confidence, and identity, such as benefits for team cohesion that resulted from challenges of
609 performing in adverse environments:

610 Yeah, so there's definitely times where you're freezing your nuts off. And you're hugging
611 each other's backs and that sort of thing. That's a key thing. And that's on selection as

612 well, breaking through that physical barrier. And actually pushing yourself into somebody
613 else's back to warm them, to warm you, that's something [Time point 1]

614
615 When considered in conjunction with the shared nature of adversity experiences, it is likely early
616 opportunities for social exchanges as a collective provided a basis from which to foster a sense of
617 “us” and “we” rather than “I” and “me” (Bastian et al., 2018). Such social identities are integral
618 for people’s cognitive and behavioural engagement with stressors, particularly in group settings
619 where they can prompt collective efforts (Haslam & Van Dick, 2011) and as protective factors
620 for team resilience (Morgan et al., 2013, 2015, 2019). Participants also outlined the importance
621 of these experiences in fostering a team’s shared confidence for future performance:

622 I personally think it brings everyone way tighter. You draw on those past adversities, like,
623 we've all done it. I know we've all been in s**t spots and brought each other out of it,
624 we're all still here. In my head it makes me think that we can do anything that we can put
625 our heads to. Yeah, it gives you that confidence like [name removed] said, yeah. We did
626 that, so I've got confidence that we could do something bigger. [Time point 1]

627
628 The perceived importance of emergent team confidence aligns well with experimental work that
629 has demonstrated its positive effects on collective performance (Fransen et al., 2017). The
630 structural components of teams were also discussed within participants’ discussions of factors
631 that promote team resilience. A shared leadership structure, clear but flexible team roles, and the
632 presence of detailed contingency plans were commonly mentioned. Participants described the
633 importance of shared leadership abilities within the team to support problem solving in the face
634 of challenges:

635 Being a leader of the group doesn't also allow everyone else here to also slack off and just
636 wait to be told what to do. Everyone here, how we overcome stuff is everyone here shows
637 that initiative and ability. They've kind of already switched on as to what's coming in so
638 they can start doing that work for the group, sort of setting the conditions for everything;
639 you sort of solve it yourself, pretty simply before the leader actually needs to give out
640 information. So that's where we work really well together. [Time point 1]

641

642 This emphasis on shared leadership is consistent with past research on team resilience in sport
643 (Morgan et al., 2015, 2019) and research that has demonstrated the superiority of horizontal
644 forms over traditional hierarchical or vertical structures (D’Innocenzo et al., 2014; Nicolaidis et
645 al., 2014). The presence of role clarity was another prominent discussion point. Within a military
646 context, standard operating procedures guide the structure and nature of such roles. The
647 criticality of these roles and the collective’s awareness of them was captured clearly in a
648 participant’s reflection of an adversity characterised by failure in communication equipment:

649 I think the same thing. Before we step off, everyone knows their job without comms
650 [communication channels] and actions on without comms. Everyone sort of knows there's
651 a certain amount of time or whatever. If you don't have comms, then everyone knows the
652 plan they need to execute from there, where we can all marry back up again to find out
653 what the f*** has gone wrong with the comms, or find out who's good or what's good.
654 Even with this is happening, I know what to do from here now. [Time point 1]

655
656 Standard operating procedures that include clear definitions and knowledge of key roles and
657 tasks are essential for distributing situation awareness across individual components of complex
658 systems such as a team, particularly when the collective has limited or no past experiences
659 working together (Stanton et al., 2006, 2017).

660 **Temporal analysis.** The temporal examination of this theme revealed nuances in role
661 adherence, such that the importance of this factor was pervasive across time points, yet the
662 nature of the theme was discussed differently at each wave. For example, perceptions changed
663 from one of ‘knowing your role’ to one where participants underscored the benefit of flexibility
664 to switch across such roles, highlighting an important adaptive process of the team. Team
665 knowledge structures have been proposed as effective in supporting adaptive processes of teams
666 (Christian et al., 2017). Shared mental models, which reflect convergent maps of the task
667 environment that enable individuals to explain and predict their surroundings (McComb, 2008),
668 were discussed by participants across time points. Participants initially spoke to a collective team

669 knowledge that reflected “everyone acting on the same idea” and having a shared understanding
670 of the “end state” during adversity. However, the discussion on these shared mental models
671 evolved to resemble an understanding of teammates’ strengths and weaknesses, and the
672 prediction of teammates’ behaviours throughout adversity three months later. Although team
673 members were grouped into small teams, this evolution in shared mental models is likely a
674 product of the knowledge participants developed of the entire trainee cohort over time. Within
675 the context of this study, these changes represent the development of a team’s shared mental
676 model from solely an accurate understanding of task constraints towards the additional
677 knowledge of the future needs and actions of other team members (Mohammed et al., 2017).
678 This finding is consistent with work on team cognition, particularly the translation of such
679 knowledge structures into action via interactive team behaviours (i.e., interactive team cognition;
680 Cooke, 2015).

681 **Behavioural processes and shared states are how collectives turn individual and team**
682 **capacities into performance under adversity**

683 Scholars have highlighted several mediating factors or mechanisms by which emergent
684 team resilience unfolds over time (Bowers et al., 2017; Gucciardi et al., 2018). In essence, the
685 shared meaning of this theme reflects the enactment of interdependent actions and the salience of
686 shared states as the primary means by which teams utilise their individual level capacities to
687 sustain or quickly recover performance in response to heightened risk or vulnerability, that is,
688 demonstrate emergent team resilience. Participants spoke to the importance of leadership
689 behaviours in coordinating the actions of team members when faced with adversity. A key
690 behaviour in response to adversity is one where leaders make quick and effective decisions and
691 communicate this information to the team:

692 Being able to make that absolute decision then, rather than trying to wait or trying to
693 figure out what a 100% decision is. Just making a decision and sticking to that decision,
694 making that work. Rather than pausing, waiting and spending too much time trying to
695 figure out what the optimal solution is, because there probably isn't one. You just need to
696 make a decision and then make that decision work. [Time point 2]

697
698 Participants also discussed the leader's coordination of the affective state of team members,
699 particularly for regulating team members' activation levels. Perhaps most characteristic of the
700 discussions, leaders who demonstrated calm actions were identified as 'infectious' upon others:

701 Yeah, definitely someone that's calm and can coordinate a situation is obviously
702 infectious as well. Like, s**t hits the fan and everyone's freaking out then it's just
703 infectious as well. So someone that's calm and collected can coordinate, sort of step up,
704 whether they're in a leadership position or not. But yeah, calm and collected and being
705 able to coordinate a small group, it's definitely important. [Time point 1]

706
707 Several other behavioural processes between individual members were used as strategies
708 to facilitate the emergence of shared affective states across the team. Most notably, participants
709 commonly referred to the use of humour about the prospect or direct experience of adversity as a
710 means by which to foster positive affective states within the group and support sustained high
711 performance (see also, Morgan et al., 2013, 2015). Aligned with a social identity perspective
712 (Haslam & Van Dick, 2011), one participant indicated how joking between team members
713 following the experience of challenge was representative of their team and a 'signature' coping
714 strategy adopted by the group:

715 And the biggest thing that would help us as a group would be comedy amongst us. We
716 take the piss out of each other, hard. If you're an outsider and you see the things we say to
717 each other, you'd be like, "Oh, they don't like each other." That's a big part of how we
718 deal with stuff. [Time point 1]

719
720 Humour represents an effective self-regulatory strategy by which to manage one's experience
721 with stress and maximise performance (Mesmer-Magnus et al., 2012), including military team
722 resilience (Temby & Vozzo, 2017). From a cognitive standpoint, humour fosters perceptions of
723 controllability and adaptive appraisals of stress (e.g., seeing the positive or challenging side to a

724 situation; Martin et al., 2003). Humour also enables people to release pent-up energy and thereby
725 effectively manage their emotional responses to stress, which can be transmitted to their peers
726 (Robert & Wilbanks, 2012). Socially, humour serves as an important ‘social lubricant’, whereby
727 it fosters and sustains quality relationships with co-workers and maximises knowledge of each
728 other (Holmes, 2000), which in turn increases opportunities for social support (Moran & Hughes,
729 2006). Acting upon these opportunities for social support was also outlined by participants as a
730 key team process. Participants discussed how proactive cooperative behaviours that lightened the
731 workload or experience of adversity within team members was a crucial process (e.g., voluntary
732 rotating of task roles):

733 Constantly looking for work and filling the gaps so we talked a lot about ownership or
734 initiative so that you expect people to be looking for what needs to be done and then to go
735 and do it. We can’t as team members be thinking "Oh this needs to be done, you got to do
736 that." It's happening too quickly. So expect that out of your teammates that they're
737 looking to help you out. [Time point 2]

738 Shared states were discussed as a means by which to complement these interdependent
739 behavioural processes. Participants referred to the beneficial nature of states such as shared trust
740 between team members when performing within the context of adversity as protective factors
741 that limit the experiences of stress across team members. Participants also spoke to the
742 importance of trust in supporting teammates, with one candidate referring to this trust in
743 allowing him to focus on his own individual coping strategies (e.g., combat breathing):

745 And that's that trust as well, so you know that if s**t does hit the fan, you don't have to
746 stress through the roof because your mates are doing their job, you can do yours. You're
747 on task, off task, helping each other out. It gets you through that stressor and then you can
748 do your combat breathing, whatever helps you. [Time point 1]

749 Although there is ongoing debate regarding a universally accepted definition, team trust
750 refers broadly to “generalized expectations of trustworthiness and the willingness to accept
751 vulnerability to all members” (Costa et al., 2018, p. 171). Team trust is a positive predictor of
752

753 team performance, even after controlling for important covariates (e.g., trust in leader, past team
754 performance), yet is contingent upon the degree of task interdependence, authority
755 differentiation, and skill differentiation (De Jong et al., 2016). Nevertheless, as a dynamic
756 concept itself, the degree and nature of the team trust-performance link may differ according to
757 temporal and contextual elements (e.g., initial level of team trust at formation, time lag; Feitosa
758 et al., 2020).

759 **Temporal analysis.** Participants predominantly discussed the importance of supportive
760 coping behaviours (e.g., sharing the workload of a teammate experiencing challenge), humorous
761 interactions, leadership behaviours, and the presence of trust between teammates at the initial
762 interview. At time point two, participants paid greater attention to the relevance of shared states
763 of cohesion and confidence between team members but remained consistent in expressing the
764 importance of effective leadership behaviours to coordinate group members. The discussion
765 surrounding the use of humour as a behavioural process is potentially reflective of the nature of
766 adversities experienced at time point one, where participants referred predominantly to the
767 chronic nature of adversity exposure experienced at time point one. The ‘relief’ utility of humour
768 to displace ongoing suffering (Godfrey, 2016) points to the potential benefit of humour to cope
769 with prolonged adversity exposure. This potential link between the behavioural processes
770 surrounding the use of humour and chronic adversity exposure reinforces the need to consider
771 the nature of adversity when exploring key resilience factors. This finding was mirrored by the
772 predominant discussion of planning and reflection activities following the extended challenges
773 experienced within the initial training course and less so when faced with the more frequently
774 occurring and complex challenges in the latter phases.

775 Cohesiveness and collective efficacy were discussed more prominently within the second
776 wave of interviews. For example, one individual described how “everyone has more confidence
777 now being able to work with the people [who] are left”. The absence of discussion at the initial
778 stage of interviews may reflect the need for time spent as a group to foster their emergence, or at
779 least appreciate their significance for the team, rather than a change in the net worth of these
780 shared states. Collective efficacy, for example, is most influential upon team functioning after
781 several weeks because of prior teamwork behaviours (Tasa et al., 2007). As previously
782 mentioned, the importance of interactions between the members of the entire cohort between
783 training activities would have acted to foster emergence of shared states, and points to the
784 potential links between early team coping behaviours and protective emergent states. Certain
785 interactive coping strategies enacted within the initial experiences of performing in a new team
786 may have served as inputs to the development of collective states that further act as protective
787 factors within the second training course (e.g., humour fostering social cohesion: Godfrey, 2016).
788 Such a perspective is consistent with the conceptualisation of resilience factors as dynamic
789 network models, whereby one resilience factor may be ‘activated’ by another resilience factor
790 (Kalisch et al., 2019).

791 **Theoretical Implications**

792 Our study provides a contextually and temporally rich description and interpretation of
793 team resilience emergence that sheds light on the interplay between the conceptual building
794 blocks and how they unfold over time within the context of high-stakes military training
795 characterised by substantial demands and challenges spanning several months. In so doing, the
796 results of this study offer two key theoretical contributions to the literature on team resilience.

797 First, our thematic integration and interpretation of military personnel's perspectives
798 support key elements of our guiding conceptual model of team resilience emergence. In terms of
799 theoretically-informed elements, we revealed support for the centrality of adversity experiences
800 as triggers for emergence processes (Gucciardi et al., 2018; Stoverink et al., 2020); individual
801 human capital resources (Gucciardi et al., 2018), situation awareness (Gomes et al., 2014;
802 Gucciardi et al., 2018), team-level factors and states including leadership, team identity
803 (Gucciardi et al., 2018; Morgan et al., 2013), and shared mental models (Gucciardi et al., 2018;
804 Morgan et al., 2019; Stoverink et al., 2020) as key drivers of the emergence process and
805 outcomes; and behavioural, cognitive, and affective (i.e., humour, trust) coordination among
806 members in translating capacities into high-performance when confronted with stressors or
807 adversities. We uncovered links between specific characteristics of adversities and the coping
808 mechanisms adopted in such circumstances, such as the use of humour to handle chronic
809 stressors. We also illustrated how task constraints play a role in shaping the coping mechanisms
810 adopted by newly formed teams. For example, performing repeated complex activities precluded
811 the use of planning and reflection regulatory strategies. Considered collectively, these data
812 connect conceptual perspectives with the dynamic realities of newly formed military teams'
813 engagement with stressors and adversities in ways that shine a spotlight on potential conceptual
814 refinements to the phenomenon of team resilience emergence.

815 Second, our contextually and temporally rich exposition of adversity experiences over
816 time provides new insights into the nature and range of adversities common within this context.
817 These insights illustrated how shared adversities can arise from either shared experiences or the
818 'catching' of experiences from others, and the more debilitating effect of chronic stressors upon
819 team functioning. This contribution is important for the science of team resilience because

820 adversity is a necessary condition that must be present for conceptually and empirically robust
821 operationalisations of the emergence process and outcomes; in the absence of knowledge of the
822 adversity experience that has triggered the emergence process, we are unable to answer the
823 question “resilience to what”. Adversities are characterised by elements relating to valence,
824 impact, predictability, challenge, emotional significance, change in world views, social status
825 changes, external control, and extraordinariness (Luhmann et al., 2020). Our findings
826 underscored the centrality of the nature of sharedness for characterising adversity experiences
827 within the context of organisational teams and the team resilience emergence process. Whether
828 an adversity is experienced simultaneously among all members or is progressively transferred
829 from one or some members to others has important implications for the emergence process and
830 outcomes (e.g., contagion). These implications include the immediacy of disturbances to team
831 functioning, and the ostensible nature of adversity to team members that would dictate the
832 tailoring of reactive coping strategies (e.g., whole team vs sub-section responses). Thus, our
833 findings underscore conceptual and practical nuances regarding the temporal elements of
834 adversity experiences that are largely absent from past work on team resilience (for a review of
835 multilevel stressor research in teams, see Razinskas & Hoegl, 2020). Extending beyond the
836 science of team resilience, our work underscores the need to broaden conceptual perspectives of
837 major life events to encompass elements related to the social nature of such experiences, which
838 are absent from existing perspectives and taxonomies (Luhmann et al., 2020).

839 **Strengths, Limitations, and Future Directions**

840 We have described a contextually and temporally rich investigation of newly formed
841 teams undergoing high-stakes military training characterised by numerous stressors and
842 adversities. Future work may look to leverage and extend these findings, particularly regarding

843 the conceptual and methodological limitations of our work. For example, our reliance on
844 retrospective interviews could be strengthened via data-prompted discussions that leverage
845 stimuli from in situ experiences with major stressors or adversities (e.g., biofeedback). Relatedly,
846 the absence of metrics to characterise trajectories of collective functioning over time within the
847 context of adversity means we are unable to appreciate fully the degree to which teams
848 demonstrated emergent team resilience, other than a crude assessment of successful progression
849 through the course. For example, there may be important nuances in the perspectives and
850 experiences of teams who demonstrate varying degrees and/or types of emergent team resilience.
851 Finally, we acknowledge there is a need to consider the complexities of team resilience
852 emergence within multi-team systems (Shuffler & Carter, 2018) including work contexts where
853 the stakes are low and adversities are less frequent, yet team functioning remains critical to work
854 success.

855 **Conclusion**

856 Scholarly interest in the phenomenon of team resilience emergence is on the rise (Bowers
857 et al., 2017; Hartmann et al., 2020; Hartwig et al., 2020; Stoverink et al., 2020). We
858 retrospectively examined the perceptions of team resilience emergence of newly formed military
859 teams following two training courses across a 4-5 month period within the context of an 18-
860 month long training program, and provided insight into temporal dynamics of these perceptions
861 of team resilience over the early stages of team development. We constructed the essence of
862 participants' discussions across five broad themes and considered their temporal elements across
863 the two waves (see Figure 2). Collectively, these data broadly support the conceptualisation of
864 team resilience emergence that informed this work (Gucciardi et al., 2018), and provide a

865 meaningful basis for scholars to consider when interpreting and exploring conceptual
866 perspectives of team resilience emergence within future empirical studies.

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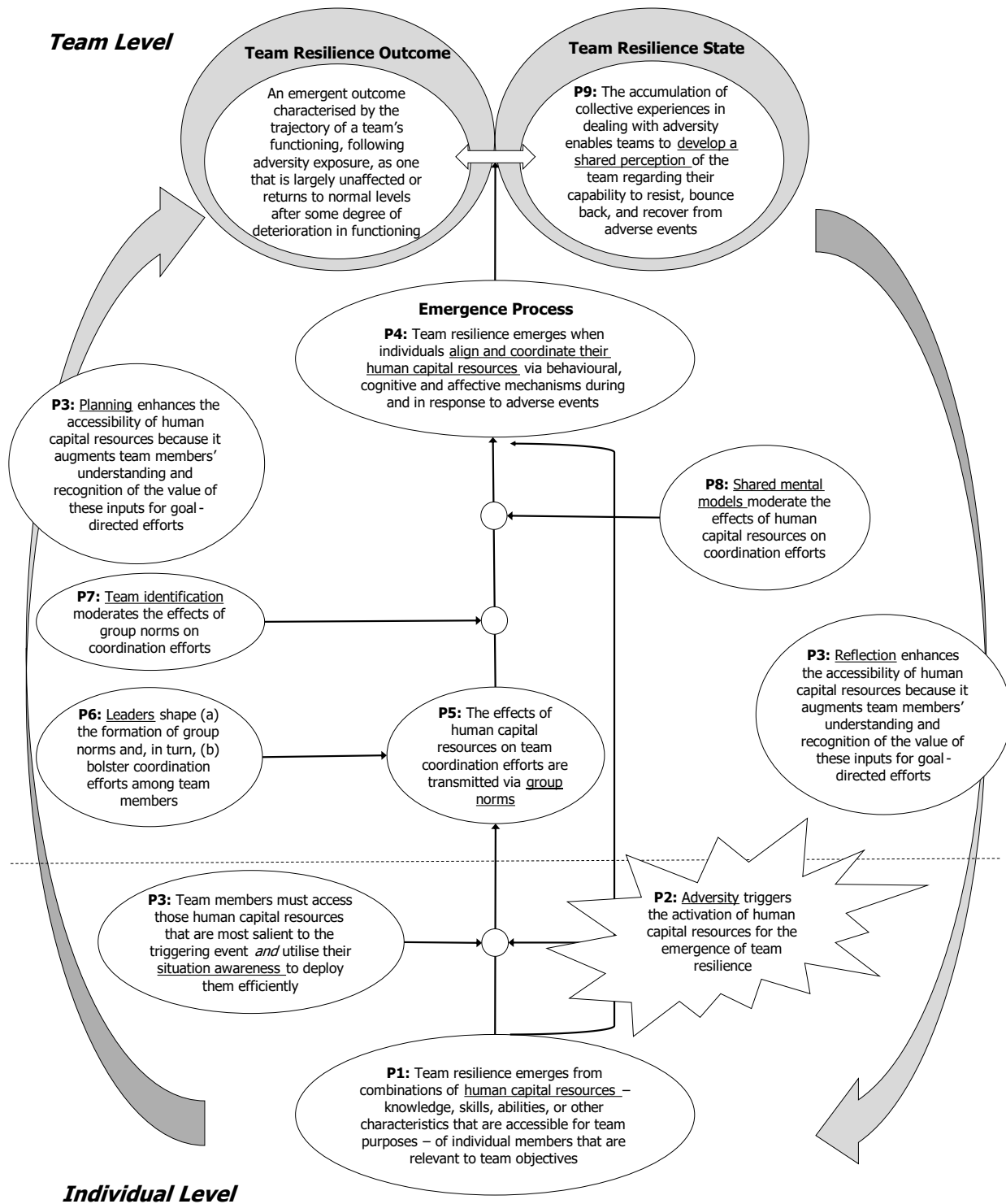


Figure 1. Conceptual model of team resilience emergence including key propositions (adapted from Gucciardi et al., 2018).

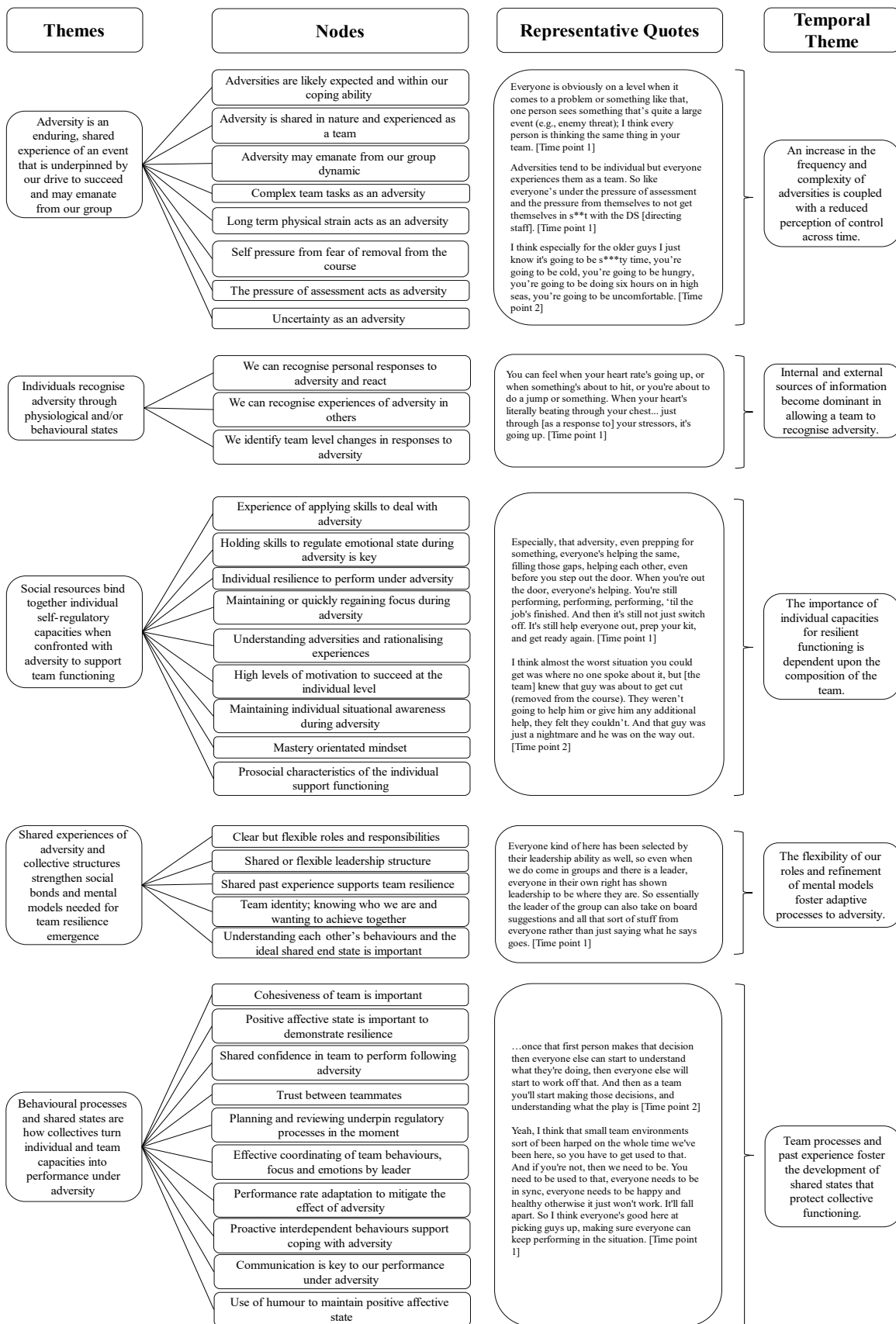


Figure 2. Overview of cross-sectional and longitudinal theme structure with representative quotes.

Interview Guide

Interviewer: Thanks for taking the time out for your course to sit down with us to share your perceptions of team resilience as it has unfolded over the first half of your training program/since we last spoke. By team resilience, we mean sustaining optimal levels of collective functioning or recovering quickly after some degree of deterioration when confronted with adversity. In other words, we're interested in the trajectories of team performance before, during, and after a team has experienced some type of adversity. By adversity, we mean an event or situation that posed substantial threat to the collective functioning of your patrol. The adversity might be something that was experienced directly by one member only, like an injury – yet has the potential to affect the functioning of the team. Or, the adversity could be something that the team as a whole experienced simultaneously, like equipment failure that disrupts communication channels between members.

Setting the Scene

1. Can you describe for me an adversity that your patrol has experienced so far on the training program/since we last spoke?
 - a. Is the experience the same or different for each team member? How so?
2. How did you as an individual / team know there was a substantial threat to the optimal functioning of your team? [*Probes*: what did you see, hear, etc? How did the situation change?]
3. How well did your patrol deal with this adversity? [*Probe*: ask them to focus on the objective of the mission – did your patrol sustain performance or deteriorate in some way but bounce back quickly?]
4. What factors do you believe played a key role in your patrol sustaining performance / bouncing back quickly? [*Note*: refer to the performance trajectory noted in response to Q3]
5. What did you learn from this experience with adversity that will help you as an individual working in teams in the future / your team's future experiences with adversity?

Interviewer: Thanks for your insights so far. You may have noticed some repetition in the surveys you have completed for us. These surveys focus on several key factors that we believe play an important role in team resilience. In the following section of the discussion, we want to gather your perspectives on these factors.

Shine a Spotlight on the Guiding Conceptual Model of Team Resilience

6. How did your patrol make use of the knowledge, skills, and attributes of individual members to deal with the adversity?
7. Was the adversity something your patrol expected to occur, or was it unexpected? [*Probe*: in other words, did you consider the adversity as part of your planning?]
 - a. If the adversity was expected => how did you plan in advance to deal with that adversity? Did these plans align with what you actually did?
 - b. If the adversity was unexpected => did your patrol reflect on the adversity experience at some point to gather learning points?
8. Coordination among team members is critical in any sort of group-based activity. How well did your patrol coordinate in response to the adversity? [*Probe*: behaviourally, cognitively, emotionally – which type(s) were most important?]
9. With teams, norms represent how members are expected to think and act. To what extent did norms play a role in your patrol's response to the adversity?
10. How did leadership play a role in your patrol's response to the adversity? [*Probe*: what did he do, say, etc?]
11. There is a classic saying, "great minds think alike", which is super important for team performance. To what extent did each member's knowledge of the situation and task at hand align with other members? [*Probe*: how did this degree of overlap affect your performance?]

12. Has your team's experience with this adversity affected your belief in your patrol's ability to deal effectively with future adversities? How so?

Looking Forward

13. What do you expect will be the main adversities that you will experience on [name of major course blinded because it will identify the participant sample]? [*Probe*: you might consider adversities that are experienced directly one member, some but not all, or the entire team]
- a. [*if time permits*] How might your patrol go about dealing with these adversities?

Ending Question

14. Is there something we haven't asked you that believe is relevant to team resilience?

Interviewer: Thank the participants for their time and sharing their perspectives of these questions.