Leading under pressure: a contextualised development approach

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Leading under pressure: A contextualised development approach

Abstract

Purpose – The study's aim was to design and test a leadership development approach using blended learning, to equip leaders for strengthening their own resilience and that of their teams.

Design/methodology/approach – A contextualised leadership development intervention was produced and evaluated following the principles of Design-Based Research. Participants were from three organisations that work internationally to address the impact of economic disadvantage. Initial research used the Behavioural Event Interview technique. Online assessment incorporated measures of situational judgement emotion recognition and attributional style. Validity measures were multi-rater feedback (criterion), and NEO-PI 3 (construct). Individual feedback and a simulation-based peer workshop were followed by a four-to-six month period of experience-driven development and a final peer workshop for consolidating and evaluating learning outcomes.

Findings – The online assessment was a valid measure of leaders' personal resilience resources and their resilience-building capability. Overall, the intervention improved participants' understanding of, and engagement with, the processes of strengthening individual and collective (team) resilience.

Practical implications – The leadership development approach is suitable for application in other organisations, if similar principles are followed to produce and evaluate materials relevant to each broad sector context. Roll-out is cost-effective, with relatively few hours of blended or virtual delivery supporting experience-driven learning.

Social implications – The impact leaders have on the wellbeing of those who report to them is well established, but less has been done to develop and formally evaluate practical, cost-effective interventions to improve this impact. The approach validated in this study can be applied more widely to benefit employee wellbeing as well as performance.

Originality/value – The study developed and evaluated a new approach to preparing leaders for the challenge of building team resilience, an aspect of leadership capability that has been given relatively little attention to date.

Key words – resilience; design-based research; leadership development; team resilience; situational judgement; experience-driven learning

Paper type – research paper

1. Introduction

1.1 Aims and context

With organisational life increasingly impacted by novel challenges on top of familiar stresses and strains, effective leadership depends on fostering collaboration, adaptation and resilience through both social/relational and material processes (Crevani *et al.*, 2021).

Our research focused specifically on the processes by which leaders can build individual and team resilience. The study aimed to design and test a leadership development approach using blended learning that would equip leaders for this, by taking stock of and strengthening their personal resilience resources (PR) and their resilience-building capability (RBC). Appreciating the many ways in which resilience is contextual (Riley and Masten, 2005), while aiming to maximise programme relevance across multiple organisations, a core principle was to tailor the intervention design for a sector-specific context. Chosen for the study was the challenge of leading teams in the International Development[1] sector (Ackah, 2022), working in unstable, conflict-affected regions of the world. The research was carried out in partnership with three organisations that had their head offices in the UK and operated in diverse ways within a common sphere of international engagement and purpose.

Aiming to establish an approach that could be replicated by organisations in other sectors to produce their own context-relevant programmes, the study method needed to combine rigour

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[1] Organisations that engage with economically disadvantaged regions to empower people to improve their wellbeing and address the causes and effects of poverty https://www.concern.org.uk/what-is-international-development

with practicality. This was addressed through conducting structured data analysis within a systematic but flexible framework informed by the "real-world" methods of design-based research (Wang and Hannafin, 2005).

1.2   Resilience research

Generically, human resilience has been described as ''the capacity of a dynamic system to adapt successfully to disturbances that threaten system function, viability, or development'' (Masten, 2014, p. 1018). This is helpful for developing frameworks that both distinguish and connect resilient systems at different levels of analysis. Whatever the level of focus, the following elements are now commonly incorporated when defining resilience: recovering from adversity; coping with threats and challenges; growing stronger through dealing with pressure; not just surviving but thriving (Reich *et al*., 2010). Recent reviews of resilience research in the workplace (Hartmann *et al*., 2020; Raetze *et al*., 2021) reflect these trends, emphasising the complex, dynamic nature of resilience and covering the individual, team and organisation levels of analysis.

Use of the term "resilience" is sometimes criticized for implying people should toughen up to deal with whatever is thrown at them, at the expense of addressing the root cause of these threats and hazards. However, the systemic view of resilience calls into question many of the assumptions that underpin such interpretations. Interactive models emphasise reciprocal effects, for example between individual agency and the wider social system (ahmed Shafi, 2020). Such approaches highlight the need to explore how person-situation (internal-external) influences interact to shape the way resilience changes over time, and the importance of factoring both in when designing any intervention to strengthen people's resilience.

At the individual level, this is illustrated by applied research that aligns a model of personal/psychological resilience resources (Cooper *et al.*, 2013) with a model of the physical and relational resources located in social ecologies (Liebenberg and Moore, 2018), to inform the design and evaluation of development programmes (Flint-Taylor *et al.*, 2023). While a few studies (e.g. Giordano *et al.*, 2022) have begun to explore what social ecological resilience means in a leadership context, this line of theory and research is still relatively undeveloped. Nevertheless, applications in a youth development context (Ungar, 2019) align closely to the investigation of risk and protective factors related to workplace pressures and employee wellbeing (Chen *et al.*, 2021; Cooper and Cartwright, 1997) – a body of work that spans the individual, collective (team/department) and organisational levels of analysis.

Collective resilience has commonly been studied in contexts where groups of people cooperate in response to a crisis/disaster situation (Drury *et al.*, 2009), while sports, information technology and business teams are typical subjects of team resilience research (Morgan *et al.*, 2017; Meneghel *et al.*, 2016). Noting the fragmented but increasing growth trajectory of the latter, Gucciardi and colleagues (2018) put forward a conceptual model of team resilience to facilitate integration. Their model highlights both the distinguishing features of team resilience and its close relationship to team performance, satisfaction and retention – a perspective that aligns well with individual-level research relating resilience to performance, satisfaction and organisational commitment (Luthans *et al.*, 2008).

Clearly it is important to understand how organisational and management practices impact individual and collective resilience, and to explore "the differential effects of collective and individual resilience on workplace outcomes at different levels of analysis" (King, Newman and Luthans, 2016, p. 3). In relation to the first of these questions, empirical studies have covered topics such as work design, support provision (mental health, information,

instrumental support), autonomous motivation, experience-based learning, resilience training

and leaders' impact on team resilience (Crane, 2017). More broadly, there is an extensive

body of theory and research linking leadership style and practice to organisational success via

employee psychological wellbeing (Robertson and Flint-Taylor, 2009).

A systematic review of resilience training in the workplace (Robertson *et al*., 2015) found

solid evidence for mental health and subjective wellbeing outcomes, with further research

needed on performance outcomes and effective training mechanisms. This is echoed in

clinical sector reviews of individual resilience interventions (Chmitorz *et al*., 2018), although

support has been demonstrated for combining cognitive-behavioural therapy (CBT) and

mindfulness techniques (Joyce *et al*., 2018).

Robertson and colleagues' review recommended including one-to-one training and support

based on individual needs. Building exposure to adversity into a programme, for example

through live simulation exercises, was concluded to have the potential to support resilience

development but only if carefully managed to avoid negative impact. This is consistent with

recent evidence from a youth resilience programme where specific increases in participants'

resilience could be attributed directly to the escalated challenge of delivering projects during

the Covid-19 crisis, in circumstances where facilitators skilfully balanced support with

empowerment (Flint-Taylor *et al*., 2023). Importantly, these findings applied to both

individual and collective (project team) resilience.

1.3 *Intervention approach*

Overall, the research literature highlights the benefit of resilience development

interventions that are context-relevant, including experience of having to deal with tough

challenges in simulated or real-life situations. In relation to this study's goal of equipping

leaders to strengthen individual and collective resilience, the evidence supported a contextualised intervention and informed the intervention design. Individual and peer group simulation exercises were core mechanisms in the first stage of the programme, together with assessment, feedback and personal development planning. The next stage involved experience of working with their teams to tackle real-life challenges, concluding with a peer review exercise to evaluate and embed learning outcomes, and sustain capability improvements.

The intervention builds on the finding that wellbeing and performance in a team can be improved when the leader (a) strengthens their ability to adapt their natural style to suit different people and situations and (b) learns to take stock of and manage other sources of workplace pressure such as change, workload and relationships in the team (Flint-Taylor and Robertson, 2007; Flint-Taylor and Cooper, 2014).

The following specific lines of scientific enquiry were identified as central: (i) personality and leadership impact (Judge *et al*., 2002; Robertson *et al*., 2014); (ii) the role that selection and development can play in promoting wellbeing in organizations (Flint-Taylor and Robertson, 2013); (iii) advances in selection and assessment methods (Boyatzis and Saatcioglu, 2008; Davda, 2011; O'Connell *et al*., 2007); (iv) the nature of personal resilience as attribute, process and/or outcome (Reich *et al*., 2010; Fredrickson *et al*., 2003); (v) CBT-based approaches to developing resilience in specific work contexts (Casey, 2011; Proudfoot *et al*., 2009); (vi) relationships between job strain and team/organisational performance (Dollard *et al*., 2000); (vii) methods for developing empathy/emotional intelligence and other approaches to helping managers flex their style and improve their impact and effectiveness (Goleman, 1998; Roberts and Hogan, 2001); (viii) how leaders can promote team resilience (Flint-Taylor and Cooper, 2017).

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1.4   *Main applied research and assessment methods*

Design-based research (DBR) provided an over-arching research framework for the study. DBR is "a systematic but flexible methodology aimed to improve educational practices through iterative analysis, design, development, and implementation, based on collaboration among researchers and practitioners in real-world settings, and leading to contextually-sensitive design principles and theories" (Wang and Hannafin, 2005, p. 6). The approach blends "empirical research with the theory-based design of learning environments" (Swan *et al*., 2014, p. 75). Core principles and practices include: being situated in a real context; focusing on the design

and testing of a significant intervention; use of mixed methods; iterative design and evaluation; collaborative partnership between researchers and practitioners; evolution of design principles and theory (Anderson and Shattuck, 2012).   This means DBR brings rigour to leadership programmes that aim for high organisational impact with relatively low participant numbers, especially where contextualisation is core to the intervention design – as in this study.

The situational judgement method was selected for the core component of a context-relevant, simulation-based assessment of participants' PR/RBC. Design of the situational judgement test (SJT) followed the theory-based, construct-driven approach, which compares well to traditional SJT approaches in terms of predictive validity for workplace performance (Tiffin *et al*., 2020), while being better suited to measuring performance-related attributes such as integrity, empathy and team awareness (Patterson *et al*., 2012).

Construct-driven SJTs assess interactive, systemic processes that integrate multiple elements of the person's knowledge, experience, capability and personality to evaluate a situation and determine the best way forward, making them well suited to measuring PR/RBC without relying on self-report methods. Their ability to predict global measures of performance is

well established, and some progress has been made on producing dimension-specific feedback

for use in a leadership development context (Guenole *et al*., 2015).

2.   The applied research study – research questions and overview

2.1   *Research questions*

The research questions were:

(a) Can a virtual simulation exercise based on situational judgement provide a valid

measure of leaders' personal resilience and their resilience-building capability?

(b) Can context-based simulations increase leaders' understanding of, and engagement

with, the management of workplace pressures for themselves and their teams?

2.2   *Research outline*

Using an established DBR format (Di Biase, 2020), our research can be summarised in

seven phases (Figure 1).

INSERT Figure 1 The phases of applied research

3.   Phase I: research questions and context analysis

3.1   *Objectives (Phase I)*

The objectives of Phase 1 of the research were to (i)

locate the research in a suitable sector-

specific setting, establishing collaboration with partner organisations, (iii) produce a

contextual analysis of pressures, and a framework for measuring leaders' PR/RBC, (iii)

design a contextualised leadership development intervention grounded in theory and research

evidence.

3.2   Method (Phase I)

3.2.1   Phase I (a) – research questions, proposal and involvement of partners

Following a review of the literature, a research proposal was developed and discussed

with a number of potential organisational participants, followed by agreeing participation and

formal contracting with the three participating organisations. This phase included ethical

approval for the study. The research team then worked closely with steering group members

to inform and engage stakeholders and recruit individual participants (on a voluntary basis).

3.2.2   Phase I (b) – contextual analysis of pressures and leader resources

The Behavioural Event Interview (BEI) method (McClelland, 1998) was used to

develop a contextualised PR/RBC framework and set of materials. BEIs were carried out

with 26 senior leaders (Group 1) nominated as representing experienced and high-performing

leadership in the sector context. The eliciting questions were (i) Please tell me about

a recent situation that you felt tested your own resilience or put you under a significant

amount of pressure (ii) Please tell me about a recent occasion when you were aware of having

to manage the impact you were having on other people, in the context of a challenging or high

pressure situation. Care was taken to assure interviewees of the strictest confidentiality.

Interviewees were also invited to contribute additional information that they thought would be

useful from a contextual point of view. Each interview was taped, transcribed and coded

according to strict BEI rules that determine what can and cannot be counted as behavioural

indicators of capability (i.e. actions, thoughts, attitudes, intentions).

A content analysis was carried out in line with DBR principles, using the coded statements

from all 26 interviews. The first step was a card sort exercise informed by the researchers'

experience, which included conducting stress/wellbeing audits and follow-up interventions in

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the sector. The second step involved members of the project's steering group in reviewing, testing and discussing the emerging themes. The researchers then incorporated the expert practitioner views of the steering group, together with knowledge of the research literature and their experience of developing and evaluating competency/resilience frameworks, to produce a draft framework with detailed indicators for the steering group to review.

3.3 Findings and output (Phase I)

3.3.1 Phase I (a) – research questions, broad context and partners

Main findings from the review of relevant theory and research are summarised in sections 1.2 and 1.3. The research questions firmed up during this phase are set out in section 2.1. Tailoring a generic definition of resilience designed to be scalable across systems and disciplines (Masten, 2014), team resilience was defined as the capacity of a team (as a dynamic system) to adapt successfully to disturbances that threaten its function, viability, or development.

The design-based research approach is outlined in Figure 1 (section 2.2). Core DBR principles included:

(a) Collaborative: involved partner organisations, establishing a researcher/practitioner steering group to guide the collaborative process of developing and testing the programme approach.

(b) Blending theory-based design and empirical research: integrated findings from the literature on resilience, leadership and assessment with the BEI results to confirm the broad context for the study, develop intervention design principles and inform a resources and capability-based framework for strengthening individual and team resilience (the PR/RBC framework).

(c) Mixed methods: the research used BEI interviews, statistical evaluation of capability framework and assessment simulation, survey evaluation of participant experience and learning, qualitative analysis of embedding and application of learning. The intervention was a blended learning intervention with online assessment simulation, one-to-one feedback for individual participants supported by online resources, peer simulation and peer review workshops (on-site and virtual).

(d) Iterative design and evaluation: phased development and roll-out of different elements of the intervention across two organisations, with iterative testing and adaptation.

3.3.2   *Phase I (b) – contextual analysis of pressures and leader resources*

Resilience resources and capability framework: the final output from the content analysis was the PR/RBC framework (Figure 2), with two main domains incorporating seven facets and detailed indicators. The framework was designed to reflect core resilience resources and capabilities while emphasising contextually salient indicators, e.g. "responds to an emergency by implementing procedures promptly but with due consideration".

The detailed interview transcripts were also reviewed by the researchers to inform the drafting of contextualised simulation scenarios for both the assessment and development elements of the research interventions. The scenarios were fictionalised situations incorporating elements drawn from these interviews and from other sources, including the lead researcher's experience of working with leaders and teams in conflict-affected regions and similarly challenging environments.

INSERT Figure 2. Resilience resources and capability framework

4.   Phase II: Individual assessment

4.1   Objective (Phase II)

The objective of Phase II of the research was to design, implement and evaluate the intervention's individual assessment measures.

4.2   Method (Phase II)

4.2.1   Phase II (a) Design of assessment measurement

Intervention assessment measures: the purpose of these measures was to help individuals take stock of their personal resilience and the impact they could be expected to have on team resilience, as a basis for strengthening/protecting their resources and capability in both areas.

A scenario exercise simulation was drafted based on the situational judgement assessment method, drawing on the PR/RBC framework and material from Phase II. A first draft was reviewed by the steering group. The next draft was reviewed and commented on by six senior leaders with experience of leading teams in relevant contexts, including Country Directors. Following the theory-based, construct driven approach and building in practitioner experience of differentiating strengths and derailers, *a priori* "best" and "worst" options were included in each stem, along with several more neutral options.

The final version incorporated two main scenarios (contexts), each with four specific events (stems). Each stem led to a set of 7-9 options for the participant to rate according to the extent to which he or she agreed the option would be a good response in the situation described (5-point scale, strongly disagree to strongly agree). This approach was preferred over the alternative of asking the participant to identify how they would respond in such a situation, which is more susceptible to the limitations associated with self-report measures. Three of the stems had options designed to check for personality derailers/over-played

strengths known to compromise leaders' effectiveness (Kaiser and Hogan, 2011) and specifically their impact on team wellbeing (Robertson *et al.*, 2014).

Well-researched principles and steps for SJT design were followed to build a complex measure that combined knowledge of what to do with judgements driven by personality and attitudes. The diversity of specific situations (stems) represented a range of pressures including imminent physical threat and more subtle risks to team morale and performance.

Short animation videos were produced to support text and audio-based descriptions of the scenarios and events. The aim was to accommodate different participant preferences for visual/audio or written material, and to create the pace and engagement needed to capture participants' natural style/personality as well as their rational analysis of the situations presented.

An attributional style measure was developed, incorporating principles from the ASQ (Peterson *et al.*, 1982) and research on the relationship between attributional style and personal resilience (Proudfoot *et al.*, 2009). Unlike the ASQ, which is entirely generic, in this contextualised attributional style (CAS) measure, the situations presented for the participant to respond to were designed to reflect the broad leadership context of the study. The measure had two main scales (Figure 3): attributional style for positive events (success) and for negative events (disappointment/failure), each measuring the extent to which the participant attributed the event to a cause that was (i) internal (due to them) or external, (ii) permanent or temporary, (iii) global or specific (applying only to that situation).

INSERT Figure 3: Contextualised measure of attributional style (CAS)

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A micro-expression recognition exercise – for integration into the scenario contexts, seven short video clips of fleeting facial reactions were produced by filming actors under the direction of one of the researchers trained in the recognition of emotion through facial expression (Ekman, 1999). Each clip required participants to correctly identify one of seven basic emotions (anger, sadness, happiness, disgust, fear, surprise and contempt), the facial expression of which is known to have involuntary features (e.g. thinning lips and glaring eyes in anger) that display in a consistent form across cultures. The ability to recognise these micro-expressions has been related to empathy and other aspects of emotional intelligence, as well as work performance outcomes, although such relationships are complex and multi-dimensional (Besel and Yuille, 2010; Elfenbein *et al.*, 2002).

Validation measures: the purpose of these measures was to test the validity of the intervention assessment measures, i.e. to examine whether scores on the scenario exercise, attributional style questionnaire and micro-expression clips related to leaders' PR/RBC either directly (concurrent validity) or indirectly (construct validity).

Multi-rater feedback exercise. The framework in Figure 2 was operationalised as a multi-rater criterion measure for establishing concurrent validity. Specific attitudinal/behavioural indicators of each of the seven facets formed the items in an online questionnaire, with respondents (including the participant) required to rate the extent to which each statement described the participant. The questionnaire used a 5-point scale where 1 = Does not describe me [him/her] well at all and 5 = Describes me [him/her] extremely well. The scale also included the option of 0 = not applicable, which could be used if the respondent felt he or she did not have sufficient information on which to base a rating.

Each participant was briefed on the exercise and asked to nominate 3-5 colleagues to complete it. It was emphasised that this was a brief exercise involving ratings on 38 items

only (no comments). All involved were assured that the reporting would preserve

respondents' anonymity, and that the results would not be used for any purpose other than a

confidential, personal feedback report and aggregate data for the research analyses.

Personality questionnaire. To examine whether scores on the intervention assessment

measures were related in a meaningful way to scores on well-established measures with

proven connections to PR/RBC constructs, the study used the NEO-PI 3 (McCrae *et al*.,

2005), an internationally validated measure of the Five-Factor Model of personality (FFM).

The FFM has for many years been instrumental in evidencing how personality relates to

resilience, leadership and other work outcomes (Furnham *et al*., 1997; McCormack and

Mellor, 2002).

4.2.2   *Phase II (b) Assessment roll-out and evaluation*

All assessment measures were administered online. Initially, 38 participants were

involved in the study. All completed the personality questionnaire, 32 completed the scenario

exercise (with micro-expressions) and attributional style questionnaire. Multi-rater results

(self and colleague) were available for the same 32 participants. Statistical analyses were set

to deal with missing data, e.g. through pairwise deletion in the case of correlation analyses.

INSERT Figure 4: Overview of the intervention process

4.3   **Findings (Phase II)**

4.3.1   *Evaluation of PR/RBC framework and criterion measure*

The PR/RBC framework was operationalised for criterion measurement in the form of

a 38 item, multi-rater questionnaire completed by each participant and 3-6 colleagues

nominated by them. Although this behavioural measure had much in common with

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competency models, the focus on resilience meant there was a limit to which previous

research could inform its structure. Therefore, an EFA factor analysis was carried out on the

multi-rater scores (mean item score, self and individual colleague ratings combined), using

Principal Axis Factoring and Varimax rotation with Kaiser Normalization. This produced 7

factors (after 14 iterations). The results are summarised in Table I.

INSERT Table I. Eigenvalues, percentages of variance and cumulative percentages for factors

for 38 multi-rater items – self and individual colleague ratings (see Figure 2 for full scale

names)

A supplementary analysis repeating the procedure for self and colleague ratings separately

produced a different four factor solution in each case. Only the solution from self ratings

clearly differentiated personal resilience resources (PR) from the RBC component of the

framework.

4.3.2 Intervention assessment measure scoring and relationships

An exploratory analysis reviewed participants' ratings of all SJT options (items).

Examining items within each stem, it was found that variance tended to be narrowest for the *a

priori* "best" and "worst" items, although this was not always the case. Across the SJT, mean

variance was somewhat greater for *a priori* "best" options (0.75) than for "worst" options

(0.65). The sixth stem (of eight) produced a wider range of ratings than the others and

identifying the "best" option appeared to be too difficult. As this stem was one of two

designed to represent "Involving and Informing", it could be excluded from the main analysis

without compromising the measurement of this capability.

Main assessment scores were an overall SJT score and two SJT sub-scale scores for (i) PR (ii)

RBC. In addition, a total emotion recognition exercise score was computed from the seven

micro-expression recognition tasks, based on whether the participant identified the correct

emotion in each case, or not. Scoring for the attributional style measure (CAS) is set out in

Figure 3. In all cases, a high score was expected to reflect a resilient attributional style.

INSERT Table II. Relationships among main intervention assessment scores, n = 32

4.3.3   *Validity of the scenario exercise and attributional style questionnaire*

The final sample size of N = 32 (from two organisations) was substantial for a pilot

that involved experienced leaders including Country Directors and others in senior roles, with

subsequent programme implementation aimed at high impact not high volume. Nevertheless,

this was a relatively small sample, especially in relation to the number of data points available

from the intervention assessment, construct validity and criterion validity measures.

Therefore, it was important to ensure rigour by focusing the main analysis on domain-level

scores and *a priori* hypothesised relationships.

Construct validity: for the emotion recognition exercise and the attributional style

questionnaire, specific theory and research-based *a priori* hypothesised relationships were

examined through correlation analysis.

INSERT Table III. Results for hypothesised relationships between NEO-PI 3 factor and facet

scores and (i) the emotion recognition exercise (ii) attributional style for positive and negative

events

INSERT Table IV. Summary of regression analyses for relationships between NEO-PI 3 facet

scales and (i) scores for the three stems designed to measure "derailer" constructs, (ii) overall

SJT score

Criterion-related validity: hypothesised predictor (concurrent) and criterion relationships were

investigated using correlation analyses for main multi-rater scores with main scenario scores

(SJT and emotion recognition tasks). With all attributional style sub-scale constructs hypothesised to predict multi-rater personal resilience scores, multiple regression (stepwise) was used to investigate this relationship.

INSERT Table V. Results for hypothesised relationships between main multi-rater scores (excluding self ratings) and (i) the scenario exercise (ii) the attributional style measure

Key finding: there was a significant relationship ($r = .406$, p = 0.032, n = 28, Table V) between the way colleagues rated participants' overall resilience resources/capability (multi-rater PR/RBC scores combined), and participants' ability to identify the best and worst options in situations that required these capabilities (combined score for all scenario exercise stems).

The trend was similar but non-significant at the sub-scale level. The strongest relationship between the PR multi-rater score and attributional style was an internal (resilient) attribution for positive events as measured by the CAS item Pos1 I/E, i.e. recognising one's own contribution when something goes well (Figure 3).

Supplementary analyses identified positive associations between the emotion recognition score and the majority of PR/RBC multi-rater items, with the strongest relationships associated with self and other awareness items: (i) *questions, consults and discusses to develop a fuller understanding* (self rating $r = .546$ p = .003; colleague rating $r = .385$ p = .047); (ii) *shows insight and self-awareness by recognising personal stress risks and how to manage them* (colleague rating $r = .449$ p = .019); (iii) *consults and involves others, encouraging participation and taking suggestions into account* (self rating $r = .387$ p = .042; colleague rating $r = .433$ p = .024); (iv) *considers how best to support other people, taking steps to relieve the pressure on them* (colleague rating $r = .434$ p = .024); (v) *offers*

information and alternative views to reassure others and help them develop a sense of

perspective (self rating r = .404 p = .033).

5.   Phase III: individual feedback, peer workshop, practice and review

5.1   *Objectives (Phase III)*

The objective of Phase III (a) was to provide one-to-one feedback for participants and build on this with a contextualised, simulation-based leadership development workshop. Workshop learning objectives were for participants to (i) take stock of their PR/RBC (ii) familiarise themselves with practical, well-validated frameworks and approaches for: raising their personal resilience to the next level; flexing their style to balance challenge with support; and managing the sources of pressure impacting their teams.

The objective of Phase III (b) was for participants to progress and embed the learning through experience-driven development (McCauley *et al*., 2013) over 4-6 months. This involved (i) implementing their personal resilience plan (ii) putting into practice what they had learned about building team resilience (iii) attending a peer group workshop at the end of this period to review progress, share experiences and consolidate their individual and collective learning.

5.2   *Method (Phase III)*

5.2.1   *Phase III (a) Developmental feedback and peer workshop*

A confidential, personal feedback report was discussed at a one-to-one session. It covered all elements of the assessment, including the multi-rater feedback and an expert-system generated, research-based interpretation of the participant's NEO-PI 3 profile in relation to PR/RBC. As the scenario exercise could only be validated at the end of the assessment roll-out, feedback on this element was based on *a priori* scores. The feedback

report also contained detailed descriptions of the elements of the PR/RBC framework, to

facilitate learning and development planning. Specific guidance was provided for developing

and implementing a personal "resilience plan" (Cooper *et al*., 2013, pp. 209-212).

Facilitated by one of the researchers, each peer workshop involved a group of eight

participants. Self-reflection, peer group discussion and input on building team resilience were

integrated into two separate, simulation exercises using contextualised video material. The

workshop design was developed, piloted, evaluated and revised through multiple iterations, in

collaboration with practitioner members of the project's steering group. A virtual version was

produced and piloted towards the end of the roll-out.

5.2.2   *Phase III (b) On-the-job implementation and peer review*

Discussion of each workshop group's collective RBC profile, together with input on

managing the sources of workplace pressure and strengthening team resilience, prepared

participants to work with their teams through a phase of experience-driven development. This

phase also included implementation of participants' personal resilience plans, supported by

guidance directing them to online resources supporting a range of individual objectives.

At the end of this 4-6 month period, participants attended a virtual peer review session with

their workshop group. For this, each participant prepared and delivered a short presentation

describing a specific example from their on-the-job implementation, followed by questions,

discussion and a general exchange of what approaches participants had tried out on the job,

what had worked well, and what they had found more difficult or less useful. The

presentations were recorded and assessed on (i) relevance of the example (ii) understanding of

concepts and models (iii) level of insight and learning gained through implementation with

their teams.

5.3   Findings (Phase III)

A participant experience survey was completed shortly after the peer workshop, at the end of

Phase III (a). The results (Figure 5) suggested a range of improvements for future iterations

of the programme. Survey scores and comments indicated that the one-to-one session and

personal report were most useful for developing PR. The workshop simulations generated

interest in the RBC component, but participants identified a need to explore it in more depth

through discussing and reflecting on the scenarios and the models they introduced.

INSERT Figure 5. Participant evaluation questionnaire mean scores for workshop participants

(n = 19)

An important finding was the extent to which participants reported being motivated to

implement what they had learned. As the survey was completed at the beginning of the

experience-driven development phase, this was an encouraging finding.

Results from the end of programme peer review indicated that the motivation to implement

had generally been sustained. Attendance at the review session was high, as was the quality

(relevance, understanding, learning) of the majority of participant presentations. These

provided (i) insights into the implications of contextual differences among participants'

circumstances, (ii) case study evidence of how understanding of, and engagement with, the

RBC aspect in particular had been strengthened through a period of experience-driven

development.

6.   Phase IV report, final conclusions and recommendations

6.1   *The research questions*

The virtual simulation exercise was found to be a valid measure of leaders' PR/RBC, as measured through concurrent multi-rater feedback. Case study presentations, participant feedback and level of sustained engagement at the end of an on-the-job implementation phase evidenced positive learning outcomes from the context-based simulations as well as indicating how these could be improved.

6.2   *Phase IV report*

The findings of the research were presented in a detailed project report and discussed with the steering group, along with guidance on future programming. In one organisation, follow-up included an intervention that used the PR/RBC model to help leaders and their teams strengthen collective resilience. In the second organisation, the model was integrated into the development and implementation of a new wellbeing strategy. These initiatives demonstrated the programme's wider and enduring impact on organisational practice.

6.3   *Discussion, conclusions and recommendations*

6.3.1   *Discussion and conclusions*

The PR/RBC framework structure (Phase I) was supported by evaluation of the multi-rater criterion measure (Phase II), which also indicated how it could be tightened up for future iterations and highlighted a risk of relying exclusively on colleague ratings when assessing a leader's personal resilience. The latter is consistent with research on the importance of subjective perception in the experience and measurement of workplace stress (Clarke and Cooper, 2000).

Phase II: Construct validation results for the SJT were consistent with research linking higher

leader Conscientiousness facet scores with increased stress levels in the leader's team

(Robertson et al., 2014). Results in Table IV show that lower levels of c5 (self-discipline),

and lower susceptibility to depression, were associated with choosing better options in the

SJT situation designed to pick up over-played diligence. Lower levels of c3 (sense of duty),

along with good energy and self-control, were associated with better choices in the situation

designed to pick up on over-played drive to action. Similarly, higher levels of assertiveness

in leaders have been linked to increased stress in their teams (Robertson et al., 2011), and in

this study lower assertiveness (e3) scores were associated with better judgements in the SJT

situation designed to identify over-played assertiveness.

This evidence of construct validity for the "derailer" stems has positive implications for

utility, in light of evidence suggesting such negative effects of leader personality are mediated

via working conditions (Robertson et al., 2014). Together with evidence from the participant

survey and case study presentations, these findings provided support for the programme's

approach to equipping leaders for strengthening team resilience by: increasing leaders'

awareness of their impact on others' wellbeing; supporting them in learning how to flex their

style; increasing their understanding of how to mitigate risks to team wellbeing through

effective management of the sources of workplace pressure.

Hypothesised relationships between the emotion recognition score and five-factor personality

constructs were non-significant but generally in the expected direction (Table III). For

attributional style for positive events (CAS POS), only the relationship with the facet o1 was

significant, while good construct validity was demonstrated for the CAS NEG dimension.

Criterion-related concurrent validity was demonstrated for the SJT overall (Table V), with

evidence for validity of the emotion recognition exercise reaching significance at the level of

specific items. Results for the attributional style measure were positive overall, but a negative (non-significant) trend for certain elements indicated a more complex picture at the sub-scale level. Given the good construct validity demonstrated for the CAS NEG dimension in particular, the evidence suggests the measure has the potential to contribute developmental insights for leaders' personal resilience, but needs to be investigated further before detailed development feedback can be provided. Specific feedback on the emotion recognition tasks would be straightforward to provide and could include an element of training (Ekman, 2003).

It was concluded that all three elements of the assessment could be retained and strengthened through future design iterations. A question arose as to whether future iterations of the programme should involve a detailed debrief on the SJT, and if so, whether to include feedback on how participants responded to individual stems. This was suggested by some participants, but overall their feedback supported the original approach of using new simulation materials at the next stage of the programme, for the purpose of developing a more in-depth understanding of the capability model and associated models and techniques.

Phases II and III: Use of contextualised simulations was also supported by participants' feedback and by their level of sustained engagement. In a subsequent iteration of the SJT, a generic, text-based version was developed and trialled by leadership development practitioners, whose reservations pointed directly to the value of the original approach using visually engaging video material set in a sector-specific context.

Limitations: while it was important for the practicality of the study design not to require a large sample size, changing circumstances led to only two out of three organisations participating fully after Phase I, which meant the target sample size could not be reached. Also, the study was not intended to extend to measuring change in participants' teams, but this is an important next stage for the research.

6.3.2   *Implications and recommendations*

Effective leadership depends on fostering collaboration, adaptation and resilience. The leadership development approach tested here breaks new ground and adds value, through focusing specifically on building this capability using contextualised assessment and development methods.

The approach is suitable for application in other organisations, if DBR principles are followed to produce and evaluate materials relevant to each broad sector context. Roll-out is cost-effective, with relatively few hours of blended or virtual delivery supporting experience-driven learning. For future implementation in the same sector context, assessment might include just the main intervention assessment measure (the scenario exercise), or any combination of this and the other measures.

More specifically, when assessing personal resilience resources through multi-rater feedback, weight should be given to both self and colleague perspectives. Inclusion of "derailer" stems in a construct-driven SJT simulation can add value, but results do not support expanding their use to the point of excluding stems that assess leaders' judgements in other ways. In future iterations, particular attention should be paid to integrating developmental feedback and opportunities for peer group discussion into the simulation exercises.

Future research: combining DBR with Realist analysis (Emmel *et al.*, 2018) would provide a robust and practical means of addressing the follow-up research question of whether/how the learning outcomes established in this study translate into improved levels of collective resilience in participants' teams. Further study of the context-based measurement of attributional style could build on previous research investigating it as a mediating variable. The study provides a foundation for new theory development, which could be achieved by

future research addressing such questions and incorporating larger samples representative of

the wider leadership population in specific sectors.

References

Ackah, P.C. (2022), "What it's like to work in social and economic development", *Harvard Business Review*, March.

ahmed Shafi, A., Templeton, S., Middleton, T., Millican, R., Vare, P., Pritchard, R. and Hatley, J. (2020), "Towards a dynamic interactive model of resilience (DIMoR) for education and learning contexts", *Emotional and Behavioural Difficulties*, Vol. 25 No. 2, pp.183-198.

Anderson, T. and Shattuck, J. (2012), "Design-Based research: A decade of progress in education research?", *Educational Researcher*, Vol. 41, No. 1, pp.16–25.

Besel, L. D. and Yuille, J. C. (2010), "Individual differences in empathy: the role of facial expression recognition", *Personality and Individual Differences*, Vol. 49 No. 2, pp.107-112.

Boyatzis, R.E. and Saatcioglu, A. (2008), "A twenty-year view of trying to develop emotional, social and cognitive intelligence competencies in graduate management education", *Journal of Management Development*, Vol. 27 No. 1, pp. 92-108.

Casey, J.R. (2011), "Comprehensive Soldier Fitness: a vision for psychological resilience in the U.S. Army", *American Psychologist*, Vol. 66 No. 1, pp.1-3.

Chen, J. W., Lu, L. and Cooper, C. L. (2021), "The compensatory protective effects of social support at work in presenteeism during the coronavirus disease pandemic", *Frontiers in Psychology*, Vol. 12.

Chmitorz, A., Kunzler, A., Helmreich, I., Tüscher, O., Kalisch, R., Kubiak, T., Wessa, M. and Lieb, K. (2018), "Intervention studies to foster resilience: a systematic review and proposal

for a resilience framework in future intervention studies", *Clinical Psychology Review*, Vol 59, pp.78-100.

Cooper, C. L. and Cartwright, S. (1997), "An intervention strategy for workplace stress", *Journal of Psychosomatic Research*, Vol. 43 No. 1, pp.7-16.

Clarke, S. G. and Cooper, C. L. (2000), "The risk management of occupational stress", *Health, Risk and Society*, Vol. 2 No. 2, pp.173-187.

Crane, M.F. (Ed.), (2017), *"Managing for resilience: a practical guide for employee wellbeing and organizational performance",* Taylor and Francis, https://doi.org/10.4324/9781315648033

Crevani, L., Uhl-Bien, M., Clegg. S. and Todnem By, R. (2021), "Changing Leadership in Changing Times II", *Journal of Change Management*, Vol 21 No. 2, pp.133-143.

Davda, A. (2011), "Measuring resilience: a pilot study"*, Assessment and Development Matters,* Autumn.

Di Biase, R. (2020), "Using design-based research to explore the influence of context in promoting pedagogical reform", *Educational Design Research*, Vol. 4 No. 2.

Dollard, M.F., Winefield, H.R., Winefield, A.H. and de Jonge, J. (2000), "Psychosocial job strain and productivity in human service workers: a test of the demand-control-support model", *Journal of Occupational and Organizational Psychology*, Vol. 73, pp. 501–510.

Drury, J., Cocking, C. and Reicher, S. (2009), "The nature of collective resilience: survivor reactions to the 2005 London bombings", *International Journal of Mass Emergencies and Disasters*, Vol. 27 No. 1, pp.66-95.

Ekman, P. (1999), "Facial expressions", in Dalgleish, T. and Power, M.J. (Eds), *Handbook of Cognition and Emotion* (pp. 301–320). John Wiley & Sons, pp.301-320. https://doi.org/10.1002/0470013494.ch16

Ekman, P. (2003), *METT micro expression training tool*, Oakland.

Elfenbein, H. A., Marsh, A. A. and Ambady, N. (2002), "Emotional intelligence and the recognition of emotion from facial expressions", in Barrett, L.F. and Salovey, P. (Eds), *The wisdom in feeling: psychological processes in emotional intelligence*, The Guilford Press, pp.37-59.

Emmel, N., Greenhalgh, J., Manzano, A., Monaghan, M. and Dalkin, S. (2018). *Doing realist research*. Sage.

Flint-Taylor, J. and Cooper, C.L. (2017), "Team resilience: shaping up for the challenges ahead", in Crane, M.F. (Ed.), *Managing for resilience: a practical guide for employee wellbeing and organizational performance*, Taylor and Francis.

Flint-Taylor, J. and Cooper, C. (2014), "Well-being in organisations, in Hämäläinen, T. and Michaelson, J. (Eds), *Well-Being and beyond – broadening the public and policy discourse*, Edward Elgar, Cheltenham, pp.244-269.

Flint-Taylor, J. and Robertson, I.T. (2013), "Enhancing well-being in organizations through selection and development", in Burke, R.J. and Cooper, C.L. (Eds), *The fulfilling workplace*, Gower, Farnham, pp.165-186.

Furnham, A., Crump, J. and Whelan, J. (1997), "Validating the NEO Personality Inventory using assessor's ratings, *Personality and Individual Differences*, Vol. 22 No. 5, pp.669-675.

Giordano, F., Cipolla, A. and Ungar, M. (2022), "Building resilience for healthcare professionals working in an Italian red zone during the COVID-19 outbreak: a pilot study", *Stress and Health*, Vol. 38 No. 2, pp.234-248.

Goleman, D. (1998), *Working with emotional intelligence*, Bloomsbury, London.

Gucciardi, D. F., Crane, M., Ntoumanis, N., Parker, S. K., Thøgersen-Ntoumani, C., Ducker, K. J., Peeling, P., Chapman, M.T., Quested, E. and Temby, P. (2018), "The emergence of

team resilience: a multilevel conceptual model of facilitating factors", *Journal of Occupational and Organizational Psychology*, Vol. 91 No. 4, pp.729-768.

Hartmann, S., Weiss, M., Newman, A. and Hoegl, M. (2020), "Resilience in the workplace: a multilevel review and synthesis". *Applied Psychology*, Vol. 69 No. 3, pp.913-959.

Joyce, S., Shand, F., Tighe, J., Laurent, S. J., Bryant, R. A. and Harvey, S. B. (2018), "Road to resilience: a systematic review and meta-analysis of resilience training programmes and interventions". *BMJ open*, Vol. 8 No. 6.

Judge, T.A., Bono, J.E., Ilies, R. and Gerhardt, M.W. (2002), "Personality and leadership: a qualitative and quantitative review", *Journal of Applied Psychology*, Vol. 87 No. 4, pp.765-780.

Kaiser, R. B. and Hogan, J. (2011), "Personality, leader behavior, and overdoing it", *Consulting Psychology Journal: Practice and Research*, Vol. 63 No. 4, p.219.

King, D. D., Newman, A. and Luthans, F. (2016), "Not if, but when we need resilience in the workplace". *Journal of Organizational Behavior*, Vol. 37 No. 5, pp.782-786.

Liebenberg, L. and Moore, J. C. (2018), "A social ecological measure of resilience for adults: the RRC-ARM", *Social Indicators Research*, Vol. 136, pp.1-19.

Luthans, F., Norman, S.M., Avolio, B.J. and Avey, J.B. (2008), "The mediating role of psychological capital in the supportive organizational climate: employee performance relationship", *Journal of Organizational Behavior: The International Journal of Industrial, Occupational and Organizational Psychology and Behavior*, Vol. 29 No. 2, pp.219-238.

Masten, A. (2014), "Invited commentary: resilience and Positive Youth Development frameworks in developmental science", *Journal of Youth and Adolescence,* Vol. 43 No. 6, pp.1018-1024.

McCauley, C. D., DeRue, D. S., Yost, P. R. and Taylor, S. (2013), *Experience-driven leader development: models, tools, best practices, and advice for on-the-job development*, Vol. 170, John Wiley and Sons.

McClelland, D.C., 1998. Identifying competencies with behavioral-event interviews. *Psychological science*, *9*(5), pp.331-339.

McCormack, L. and Mellor, D. (2002), "The role of personality in leadership: an application of the five-factor model in the Australian military", *Military psychology*, Vol. 14 No. 3, pp.179-197.

McCrae, R.R., Costa, Jr, P.T. and Martin, T.A. (2005), "The NEO–PI–3: a more readable revised NEO personality inventory", *Journal of Personality Assessment*, Vol. 84 No. 3, pp.261-270.

Meneghel, I., Martínez, I. M. and Salanova, M. (2016), "Job-related antecedents of team resilience and improved team performance", *Personnel Review,* Vol. 45 No. 3, pp.505–522.

Morgan, P. B., Fletcher, D. and Sarkar, M. (2017), "Recent developments in team resilience research in elite sport", *Current Opinion in Psychology*, Vol. 16, pp.159-164.

O'Connell, M.S., Hartman, N.S., McDaniel, M.A., Grubb, W.L. and Lawrence, A. (2007), "Incremental validity of situational judgment tests for task and contextual job performance", *International Journal of Selection and Assessment*, Vol. 15, pp. 19–29.

Patterson, F., Ashworth, V., Zibarras, L., Coan, P., Kerrin, M., and O'Neill, P. (2012), "Evaluations of situational judgement tests to assess non-academic attributes in selection", *Medical Education*, Vol. 46 No. 9, pp.850-868.

Peterson, C., Semmel, A., Von Baeyer, C., Abramson, L.Y., Metalsky, G.I. and Seligman, M.E. (1982), "The attributional style questionnaire", *Cognitive Therapy and Research*, Vol. 6 No. 3, pp.287-299.

Proudfoot, J.G., Corr, P.J., Guest, D.E. and Dunn, G. (2009), "Cognitive-behavioural training to change attributional style improves employee well-being, job satisfaction, productivity, and turnover", *Personality and Individual Differences*, Vol. 46, No. 2, pp. 147–153.

Raetze, S., Duchek, S., Maynard, M. T. and Kirkman, B. L. (2021), "Resilience in organizations: an integrative multilevel review and editorial introduction". *Group and Organization Management*, Vol. 46 No. 4, pp.607-656.

Reich, J.W., Zautra, A.J. and Hall, J.S. (Eds), (2010), *Handbook of Adult Resilience*, The Guildford Press, New York.

Riley, J.R. and Masten, A.S. (2005), "Resilience in context", in Peters, R.D., Leadbeater, B. and McMahon, R.J. (Eds), *Resilience in Children, Families, and Communities,* Springer, Boston, MA.

Roberts, B.W. and Hogan, R. (Eds) (2001), *Personality psychology in the workplace,* American Psychological Association https://doi.org/10.1037/10434-000

Robertson I. and Cooper, C.L. (2013), "Resilience", *Stress and Health: Journal of the International Society for the Investigation of Stress*, Vol. 26 No. 3, pp.175-176.

Robertson, I. T., Cooper, C. L., Sarkar, M. and Curran, T. (2015), "Resilience training in the workplace from 2003 to 2014: a systematic review". *Journal of Occupational and Organizational Psychology*, Vol. 88 No. 3, pp.533-562.

Robertson, I.T. and Flint-Taylor, J. (2009), "Leadership, psychological well-being and organizational outcomes", in Cartwright, S. and Cooper, C. (Eds), *The Oxford Handbook of Organizational Well-Being*, Oxford University Press, Oxford, pp.159-179.

Robertson, I., Flint-Taylor, J., Hodgkinson, G. and Healey, M. (2011), "Leader personality and workgroup well-being". British Academy of Management Conference, 2011

Robertson, I., Healey, M.P., Hodgkinson, G.P., Flint-Taylor, J. and Jones, F. (2014), "Leader personality and employees' experience of workplace stressors", *Journal of Organizational Effectiveness: People and Performance*, Vol. 1, p. 281.

Swan, K., Day, S. L., Bogle, L. R., and Matthews, D. B. (2014), "A collaborative, design-based approach to improving an online program", *The Internet and Higher Education*, Vol. 21, pp.74-81.

Tiffin, P. A., Paton, L. W., O'Mara, D., MacCann, C., Lang, J. W. and Lievens, F. (2020), "Situational judgement tests for selection: traditional vs construct-driven approaches". *Medical Education*, Vol. 54 No. 2, pp.105-115.

Ungar, M. (2019), "Designing resilience research: using multiple methods to investigate risk exposure, promotive and protective processes, and contextually relevant outcomes for children and youth", *Child Abuse and Neglect*, Vol. 96.

Wang, F. and Hannafin, M. J. (2005), "Design-based research and technology-enhanced learning environments", *Educational Technology Research and Development*, Vol. 53 No. 4, pp.5–23.

Phase	Characteristics	Implications for this study
I (a) Research questions and high-level design	Exploration of literature, suitable contexts, potential partners	Questions and design grounded in theory and research; set in high pressure organisational context; researcher/practitioner collaboration established
I (b) Contextual analysis of pressures/ leadership resources (Participant Group 1)	Research common pressures and high-performance leader responses; develop leadership framework	Systematic analysis of context-relevant sources of workplace pressure and effective leader attitudes/behaviours; collaborative production of leadership resources/capability framework
Established a theory- and evidence-based, context-relevant framework for assessing and developing leaders' capability in regard to fostering collaboration, adaptation and resilience		
II (a) Design of intervention assessment and validation exercise	Develop measures for assessment and validation	Produced construct-driven SJT simulation supplemented by evidence-based measures of emotion recognition and attributional style; agreed construct and criterion validity measures
II (b) Assessment roll-out and evaluation (Participant Group 2)	Nomination and briefing of participants; online completion of assessments; statistical analysis of scores	Framework and criterion measure evaluated through factor analysis; exploratory, construct and criterion validity analyses carried out for the SJT simulation, emotion recognition exercise and attributional style measure
Applied the framework to assess the capability of leaders working in particularly challenging international contexts where they and their teams face high levels of pressure		
III (a) Feedback and peer workshop with initial evaluation (Participant Group 2)	One-to-one feedback on assessment results; peer workshop with input and simulation	Testing and evaluation of participant feedback report and process; testing and initial evaluation of peer workshop approach and materials
III (b) Practice and review (Participant Group 2)	Period of on-the-job implementation followed by case study peer review	Testing and evaluation of sustained engagement and individual participant learning outcomes (understanding and relevance of real-life application)
Produced an evaluation of the leadership development approach, showing its effectiveness in the study context and establishing principles for application in other contexts		
IV. Report and guidance on future programming	Detailed steering group report and recommendations	Collaborative review of study findings and implications for future iterations in current and new sector contexts

Figure 1. The phases of applied research

Domains	Facets				
Leader's personal resilience resources (PR)	Confidence and Purpose (CandP)		Adaptability and Social Support (AandSS)		
Leader's resilience-building capability (RBC)	Evaluation, Decisions and Action (EDA)	Practical Support (PS)	Morale and Team Climate (MTC)	Involving and Informing (IandI)	Social and Situational Awareness (SSA)

Fig. 2. Resilience resources and capability framework

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CAS POS

6 situations – positive events

(Pos1, Pos2, Pos3, Pos4, Pos5, Pos6)

3 questions for each:

internal or external attribution (I/E)

permanent or temporary attribution (P/T)

global or specific attribution (G/S)

CAS NEG

6 situations – negative events

(Neg1, Neg2, Neg3, Neg4, Neg5, Neg6)

3 questions for each:

internal or external attribution (I/E)

permanent or temporary attribution (P/T)

global or specific attribution (G/S)

CAS POS score = resilient attributional style for positive events

CAS NEG score = resilient attributional style for negative events

CAS score = resilient attributional style

Figure 3: Contextualised measure of attributional style (CAS)

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| Invitation, briefing and set-up | Complete online personality measure (NEO-PI 3) | Complete online scenario exercise and attributional style measure | Participants and colleagues complete multi-rater exercise | Confidential personal feedback report and 1 -1 debrief | 1 day peer workshop including preparation for on-the-job learning phase | Personal resilience action plans and self-managed learning | 4-6 month follow-up virtual workshop (1.5 hours) |

Figure 4: Overview of the intervention process

Table I. Eigenvalues, percentages of variance and cumulative percentages for factors for 38

multi-rater items – self and individual colleague ratings (see Figure 2 for full scale names)

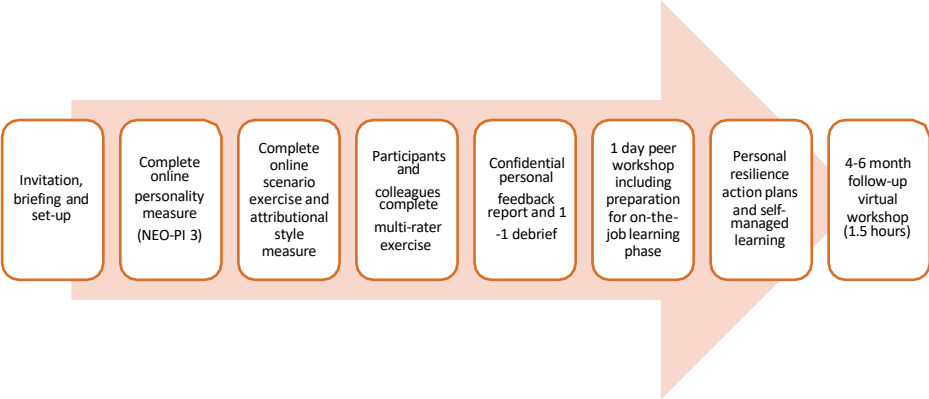| Factor	Primary Loadings Item no. with *a priori* scale		Eigenvalue	% of Variance	Cumulative %
1	Q18 PS	0.70	5.92	15.58	15.58
	Q19 PS	0.70			
	Q17 PS	0.64			
	Q21 PS	0.59			
	Q26 MTC	0.58			
	Q24 MTC	0.54			
	Q16 EDA	0.53			
	Q22 MTC	0.51			
	Q14 EDA	0.43			
	Q25 MTC	0.42			
	Q13 EDA	0.32			
2	Q2 CandP (PR)	0.72	5.05	13.28	28.86
	Q3 CandP (PR)	0.71			
	Q1 CandP (PR)	0.67			
	Q8 AandSS (PR)	0.55			
	Q23 MTC	0.53			
	Q9 AandSS (PR)	0.45			
	Q34 SSA	0.42			
	Q12 EDA	0.28			
3	Q15 EDA	0.80	3.61	9.51	38.37
	Q4 CandP (PR)	0.80			
	Q20 PS	0.57			
	Q7 AandSS (PR)	0.50			
4	Q35 SSA	0.74	3.53	9.28	47.65
	Q36 SSA	0.63			
	Q37 SSA	0.51			
	Q11 AandSS (PR)	0.37			
	Q28 IandI	0.35			
5	Q32 IandI	0.79	3.29	8.67	56.32
	Q31 IandI	0.60			
	Q38 SSA	0.52			
	Q27 IandI	0.47			
	Q30 IandI	0.46			
6	Q33 SSA	0.72	2.67	7.03	63.35
	Q10 AandSS (PR)	0.63			
	Q6 CandP (PR)	0.44			
	Q29 IandI	0.43			
	Q5 CandP (PR)	0.26			
7	Q15 EDA (secondary loading)	0.59	1.13	2.96	66.31

Note: Factor descriptions – Factor 1 practical and emotional support; Factor 2 Personal Resilience;

Factor 3 confident, considered action; Factor 4 Social and Situational Awareness; Factor 5

Involving and Informing; Factor 6 solving problems together; Factor 7 flexible decision-making

the equation; item Pos1 I/E r = .480 p = .010

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Table II. Relationships among main intervention assessment scores, n = 32

	Scenario (SJT) mean score all stems	Scenario emotion recognition	CAS POS	CAS NEG
Scenario (SJT) mean score all stems	1	.341*	.127	-.295
Scenario emotion recognition	.341*	1	.198	-.130
CAS POS	.127	.198	1	-.058
CAS NEG	-.295	-.130	-.058	1

*Correlation is significant at the 0.05 level (2-tailed)

.010

Table III. Results for hypothesised relationships between NEO-PI 3 factor and facet scores

and (i) the emotion recognition exercise (ii) attributional style for positive and negative events

	NEO-PI 3 scales (n = 34)				
Emotion recognition (total score)	NEUROTICISM (-ve) -.242 ns	OPENNESS TO EXPERIENCE .119 ns	CONSCIENT-IOUSNESS (-ve) -.252 ns	e2 Gregariousness .226 ns	a2 Straightforward-ness (-ve) -.320 ns
CAS POS	e5 Excitement seeking (adventurous) .320 ns	e6 Positive Emotions .028 ns	o1 Fantasy (imagination) .413*	a5 Modesty (-ve) -.102	c1 Competence .049 ns
CAS NEG	n3 Depression (-ve) -.362*	n6 Vulnerability to Stress (-ve) -.345*	e6 Positive Emotions .270 ns	c1 Competence .434*	c5 Self-Discipline .444**

Table V. Results for hypothesised relationships between main multi-rater scores (excluding self ratings) and (i) the scenario exercise (ii) the attributional style measure

(i)	Scenario (SJT) mean score all stems n = 28	Scenario (SJT) mean score PR stems n = 28	Scenario (SJT) mean score RBC stems n = 28	Scenario emotion recognition score n = 27
Multi-rater mean score all items	*r* .406*	*r* .292	*r* .327	*r* .256
Multi-rater PR items	*r* .449*	*r* .350		*r* .211
Multi-rater RBC items	*r* .380*		*r* .313	*r* .267

*Correlation is significant at the 0.05 level (2-tailed)

(ii)	Adjusted R^2	Std Error of the Estimate	CAS item scores (36 questions)
Multi-rater mean score PR items	.725	.180	Pos1 I/E, Pos1 P/T, Pos4 G/S, Neg6 G/S, Pos2 P/T, Neg2 P/T, Neg6 I/E

Note: Multiple regression, 7 item AS scores in the equation; item Pos1 I/E *r* = .480 p = .010

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Table IV. Summary of regression analyses for relationships between NEO-PI 3 facet scales and (i) scores for the three stems designed to measure "derailer" constructs, (ii) overall SJT score

SJT scores	NEO-PI 3 predictors	R²	Adjusted R²	Std Error of the Estimate	Sig. F
Over-played assertiveness	e3 Assertiveness (-) n5 Impulsiveness (+)	.305	.284	1.10067	<.001
Over-played diligence	n3 Depression (-) c5 Self-Discipline (-)	.384	.346	1.58478	<.001
Over-played drive to action	n5 Impulsiveness (-) c3 Dutifulness (-) e4 Activity (+), o6 Values (-)	.515	.451	1.19372	<.001
SJT overall score	n3 Depression (-)	.132	.105	.30216	.034

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0 p = .010

Question	Rating scale: 1 = very little; 2 = to some extent; 3 = to a significant extent
1	To what extent did your report provide a useful starting point for reflecting on/taking stock of your personal resilience?
2	To what extent did your report provide a useful starting point for exploring the impact you could have on team resilience?
3	To what extent did the video materials used during the workshop help in creating a realistic scenario for the observed exercise?
4	To what extent did the observed workshop exercises help you to reflect on the main sources of workplace pressure and how you manage them for yourself and the team?
5	To what extent did the "resilient role model" presentation exercise in the workshop help you to reflect on your personal resilience?
6	To what extent did your participation in the workshop motivate you to spend more time exploring and trying out the recommended approaches/materials?
	1 = unlikely; 2 = somewhat likely; 3 = very likely
7	How likely are you to try out one or two of the suggested approaches to improve your personal resilience and/or your impact on the team?

Figure 5. Participant evaluation questionnaire mean scores for workshop participants (n = 19)

Question	Rating scale: 1 = very little; 2 = to some extent; 3 = to a significant extent	
1	To what extent did your report provide a useful starting point for reflecting on/taking stock of your personal resilience?	2.63
2	To what extent did your report provide a useful starting point for exploring the impact you could have on team resilience?	2.32
3	To what extent did the video materials used during the workshop help in creating a realistic scenario for the observed exercise?	2.37
4	To what extent did the observed workshop exercises help you to reflect on the main sources of workplace pressure and how you manage them for yourself and the team?	2.26
5	To what extent did the "resilient role model" presentation exercise in the workshop help you to reflect on your personal resilience?	2.21
6	To what extent did your participation in the workshop motivate you to spend more time exploring and trying out the recommended approaches/materials?	2.42
	1 = unlikely; 2 = somewhat likely; 3 = very likely	
7	How likely are you to try out one or two of the suggested approaches to improve your personal resilience and/or your impact on the team?	2.83

Figure 5. Participant evaluation questionnaire mean scores for workshop participants (n = 19)

Additional references cited in text

Flint-Taylor, J., Abuhamdia, M., Berrado, I., Bush, M., El Khoury, R., Fawzi, F., Jalal, M., Mourabiti, I., Sayah, H., Shukr, R., Wakim, N., Ward, B. and Stewart, S. (2023), "Valuing adaptive programming: a study of resilience processes and outcomes", *Evaluation and Program Planning*, Vol. 98, doi: 10.1016/j.evalprogplan.2023.102300.

Fredrickson, B.L., Tugade, M.M., Waugh, C.E. and Larkin, G.R. (2003), "What good are positive emotions in crisis? A prospective study of resilience and emotions following the terrorist attacks on the United States on

September 11th, 2001", *Journal of Personality and Social Psychology*, Vol. 84 No. 2.

Guenole, N., Chernyshenko, O. and Stark, S. (2015), "Are predictions based on situational judgement tests precise enough for feedback in leadership development?", *European Journal of Work and Organizational Psychology*, Vol. 24 No. 3.

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