

Prevention-focused leadership and well-being during the pandemic: The mediating role clarity and workload

Abstract

Purpose

The global pandemic has required organisational leaders to respond rapidly in a time of uncertainty. A specific challenge for leaders during the global pandemic is the salient and immediate threat to worker health and well-being. Unfortunately, the consequences of different leadership actions in this context are not well understood. By exploring the path from leader behaviour to employee wellbeing via experienced work characteristics, this study aims to provide a framework for better understanding pandemic threat and corresponding leadership impact.

Design/methodology/approach

Two prevention-focused leadership strategies were explored: defend and adapt strategy. Two important work characteristics: role clarity and workload were used to help explain the links between leadership strategies and well-being. Potential mediating pathways were tested in path analysis with Mplus (v7.4) based on 515 online survey responses.

Findings

Different mediating pathways demonstrated complex associations between the constructs. Increases in the both prevention-focused leadership strategies were found associated with positive well-being by increasing employees' perceptions of leadership and by improving role clarity in the workplace. Notably, evidence also supported that increase in defend strategy was linked to reduced worker well-being through intensified workload.

Originality/Practical implications

In times of uncertainty amidst the global COVID-19 pandemic, prevention-focused leadership is vital to engage workforce and ensure compliance with safety procedures to avoid associated risks to worker health and organisational performance. This research focused on the

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3 rarely studied topic of prevention-focused leadership, and how prevention strategies were
4 related to employee well-being. Based on the findings for prevention-focused defend and adapt
5 strategies, this study suggested leadership practices that might shape employee well-being in a
6 time of turbulence.
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12 **Keywords:** Prevention-focused leadership, defend, adapt, work characteristics, role
13 clarity, workload, worker well-being.
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17 **Introduction**

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19 The global pandemic has required organisational leaders to respond rapidly in a time of
20 uncertainty and threat. The consequences of different leadership actions in this context are not
21 well understood, and actions to address one threat might have unintended consequences in
22 another area (Althouse *et al.*, 2020). For example, if access to an employee meals area is
23 restricted to reduce close contact, employees might seek out public locations with even higher
24 levels of contact. It is important that leadership practice and responses are appropriate for the
25 uncertainties and threats engendered by the pandemic. Unfortunately, there is a lack of
26 frameworks in the mainstream leadership literature to support leadership decision making in a
27 state of constant flux (Rosenhead *et al.*, 2019; Gardner *et al.*, 2020). Neither is there guidance
28 for leadership growth and development in uncertain contexts (Collinson *et al.*, 2018; King and
29 Badham, 2018; Tourish, 2020). There is a need to extend leadership approaches when risk and
30 ambiguity are inherent in this time of turbulence.
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47 A specific challenge for leaders during the global pandemic is the salient and immediate
48 threat to worker health and well-being (Li and Griffin, 2022; Office of Industrial Relations,
49 2021). There has been a marked increase in the prevalence of anxiety and depression during
50 the pandemic with reported numbers even doubling in some countries (OECD, 2021). Adding
51 to this problem, more than 60% of countries have reported disruptions to the delivery of mental
52 health services (WHO, 2020). We use self-regulation theory to propose that leaders will
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3 respond to pandemic threat with a prevention-focus that emphasises reducing risks and
4 avoiding loss (Higgins, 1998; Neubert *et al.*, 2008; Wallace and Chen, 2006).
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8 We incorporate two prevention-focused leadership strategies proposed by Casey *et al.*
9 (2019) to maintain safety performance in times of uncertainty. Safety leadership is generally
10 conceptualised as the leadership practices that could directly influence workplace safety and
11 performance at different organisational levels (Griffin and Talati, 2014; Schwatka *et al.*, 2019).
12 It reflects leaders' safety attitudes and intentions to promote safety, which in turn predict other
13 safety outcomes and behaviours (Clarke, 2013). The two prevention-focused safety leadership
14 strategies in Casey *et al.* (2019) are: defend strategy and adapt strategy. Defend strategy
15 involves behaviours that emphasise vigilance for errors and mistakes, with a strong focus on
16 following rules, standardised procedures and legislated obligations to reduce sources of danger
17 and risks in the work environment. Leaders demonstrate defend strategies by closely
18 monitoring high risk works and enforcing training in health and safety duties and safe work
19 methods. Leaders demonstrating an adapt strategy emphasise learning from mistakes and past
20 performance, and making adjustments and continuous improvement practices to avoid
21 potential hazards in the future. This could be reflected by leaders encouraging open discussions
22 on the mistakes and errors and how to prevent similar situations from happening again. Finally,
23 we propose that leader prevention-focus will influence employee well-being by shaping
24 employee experiences of workload and role clarity. By exploring the path from leader
25 prevention-focused behaviours to employee wellbeing via experienced work characteristics,
26 we provide a framework for better understanding pandemic threat and corresponding
27 leadership impact.
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54 To unpack the possible links between prevention-focused defend and adapt strategies
55 and employee well-being, changes in the use of these leadership strategies and employee
56 outcomes during the pandemic should be measured. However, the unexpected and rapid onset
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3 of the pandemic limited the degree to which researchers could implement appropriate
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5 longitudinal designs to track changes in leadership behaviours and employee outcomes.
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7 Therefore, in this study we adopt a retrospective design in which participants report the degree
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9 they perceive leadership practices changed since the commencement of the pandemic. As
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11 safety leaders are facing challenges in responding to the current COVID-19 crisis, this study
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13 offers practical recommendations to support our leaders in this time of crisis and stress.
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16 17 **Theoretical development**

18 19 **Prevention-focused leadership strategy**

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21 Self-regulatory focus (SRF) describes two types of strategy people use to pursue desired
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23 outcomes (Higgins, 1998; Wallace and Chen, 2006; Scholer and Higgins, 2010). Self-
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25 regulation via a promotion focus strategy maximises the accomplishment of greater quantity
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27 and advancement of work. Self-regulation via a prevention focus emphasises vigilance and
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29 minimises negative outcomes by responsibly adhering to work-related rules and regulations.
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31 Extensive research in self-regulatory focus theory indicates that perceptions of threat often
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33 evoke a prevention focus in individuals. Under threat, people tend to be more vigilant, striving
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35 to prevent the occurrence of negative events rather than ambitiously promote the gains (Higgins,
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37 1998; Neubert *et al.*, 2008; Seibt and Forster, 2004; Barber and Mather, 2013). For example,
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39 Wallace and Chen (2006) found that safety climate of the organisation as a situational cue could
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41 increase prevention focus, and in turn safety performance. As the global COVID-19 pandemic
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43 unprecedentedly increased safety risks, we expect that the threat associated with the pandemic
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45 will generate a prevention focus in leaders who will then place a greater emphasis on avoiding
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47 associated risks to worker health and organisational performance.
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54 Current leadership theories and regulatory focus theories focus mostly on regulatory
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56 foci of employees, and it has been widely identified that employee regulatory focus could
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58 mediate or moderate the relationship between leadership behaviours and employee outcomes
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(Kark *et al.*, 2018; Neubert *et al.*, 2008; Hamstra *et al.*, 2011). Kark *et al.* (2018) explored the effects of transformational and transactional leadership on employees' creativity through employee self-regulatory focus. They found that transformational leadership could promote creativity by enhancing follower's promotion focus, while transactional leadership was aligned with followers' prevention focus, in turn associated with lower followers' creativity. Similarly, Neubert *et al.* (2008) claimed that leadership style of initiating structure evoked the prevention focus of organisational members, in turn promoted their compliance with performance expectations and avoidance of deviations from work roles. Hamstra *et al.* (2011) found that with highly prevention-focused employees, increased transactional leadership could mitigate turnover intention. Similarly, Whitford and Moss (2009) found that transformational leadership could positively link with employee work engagement at face-to-face team environment, especially if employee prevention focus was elevated.

However, up to now there has been a dearth of studies exploring self-regulator focus of the leaders, specifically prevention-focused leadership strategies. Stam *et al.* (2018) and Taylor-Bianco and Schermerhorn (2006) studied the impact of prevention-focused leadership, yet the purposes of both studies were to explore the impact on employee positive performance. Therefore, there is a lack of insights into how prevention-focused leadership strategies could affect employee well-being. The mental health threat caused by COVID-19 provides an opportunity to study this issue. A deeper understanding of prevention-focused leadership under conditions of threat could offer insights into leadership development in this global COVID-19 crisis and beyond.

Mediating role clarity and workload

A variety of dimensions of work characteristics have been used to explain leadership and employee well-being relationship in the workplace (De Jonge and Schaufeli, 1998; Parker, 2003; Wilson *et al.*, 2004). Among them, role clarity and workload have been highlighted in

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2
3 recent meta-analyses as important predictors of well-being outcomes, including burnout, work
4 stress, affective commitment and job satisfaction (Bowling *et al.*, 2015; O'Connor *et al.*, 2018;
5 Pindek and Spector, 2016). Vullings *et al.* (2020) demonstrated that ethical leadership
6 positively predicted role clarity, and thus reduced follower burnout, while passive leadership
7 impaired role clarity, and in turn increased follower burnout. Similarly, De Villiers and Stander
8 (2011) concluded that leader-member relations could result in a better understanding of roles,
9 and ultimately could empower and engage employees. To demonstrate the mediating role of
10 workload, Altinay *et al.* (2018) claimed that leader-member exchange would elevate employees'
11 work engagement by reducing their role overload. Barling and Frone (2017) found that passive
12 leadership could place intensified demands on employees, resulting in their psychological work
13 fatigue and poor mental health outcomes.

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15 Not only as important mediators, role clarity and workload are also salient work
16 characteristics during COVID-19. In amidst of the pandemic, for the industries that continued
17 during the emergency declaration, workers experienced increased job demands and workload
18 due to limited workforce (Shimazu *et al.*, 2020). Also, because workers face possible risks of
19 infection during the course of their work, specific infection prevention and control measures
20 have to be applied, which further heightened their work requirements (Chen *et al.*, 2020; Jordan,
21 2020). For the industries that were able to adopt flexible working arrangements, virtual and
22 remote working blurred the boundary between work and home, longer working hours and
23 bigger workload were reported (Arntz *et al.*, 2019; Palumbo, 2020; Pirzadeh and Lingard,
24 2021). Thus, COVID-19 increased workload in many different scenarios.

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26 Moreover, rapid uptake of collaborative technology (e.g., online meetings) made digital
27 collaboration a common feature of work during the pandemic. The convenience of
28 collaborative technology enabled workers to obtain more clarity through increased
29 communications with supervisors and co-workers (Carroll and Conboy, 2020; Crayne and
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3 Medeiros, 2020; He *et al.*, 2020). In addition, in response to the unpredictable changes, many
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5 organisations learned to be agile and adaptive by clearly communicating chains of command
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7 and role accountability ahead of time (De Smet *et al.*, 2021). Consequently, faster decision
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9 making and improved clarity of purpose were achieved as silver linings (Chong *et al.*, 2020).
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11 As workload and role clarity have been reported as increasingly important during the pandemic,
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13 this study explored their potential in mediating the path from leader behaviour to employee
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15 well-being.
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18 19 **Prevention-focused defend strategy**

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21 Casey *et al.* (2019) proposed two prevention-focused leadership strategies: defend
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23 strategy and adapt strategy. The essence of defend strategy is risk management in times of
24
25 uncertainty (Casey and Griffin, 2020). With defend strategy, safety leaders deploy effective
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27 initiatives to proactively identify and manage potential hazards (Fernández-Muñiz *et al.*, 2014).
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29 Compliance and vigilance are required with various monitoring measures to make sure workers
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31 are following the safety procedures and obligations (Casey *et al.*, 2019). Defend leadership
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33 conducts frequent risk scanning and assessments to spot errors at an early stage. Additional
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35 corrective actions are also required to make any potential sources of danger salient, when
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37 expected outcomes are not achieved (Casey and Griffin, 2020). During the COVID-19 health
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39 and safety crisis, the application of defend strategy requires even stricter compliance to regular
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41 safety regulations plus the additional COVID-19 safety instructions. Defend safety measures,
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43 such as maintaining good hygiene, regularly cleaning and disinfecting the workplace, limiting
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45 physical contact and sharing of equipment, are of critical importance in minimising infection
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54 Prevention-focused leaders with a defend strategy cultivate a culture of vigilance by
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56 integrating frequent auditing, constant preparedness, repeated assessments and prevention of
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58 injuries. With an emphasis on constant risk identification and avoidance of preventable dangers,
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3 enacting a defend strategy could create more tasks on the to-do list in the workplace and could
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5 increase workload requirements for workers (Jordan, 2020; Chen *et al.*, 2020). This could
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7 especially be the case when site safety control and physical distancing requirements result in a
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9 limited capacity of workers on site. Thus, the workload demands perceived by the onsite
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11 workers could be intensified as a result of increased defend strategy during the pandemic
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13 (Shimazu *et al.*, 2020). Previous studies reported that excessive workload would predict
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15 burnout and poor well-being outcomes (Burke *et al.*, 2012). Thus, we propose that:
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19 H1: A perceived increase of defend strategy is associated with higher workload, and in
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21 turn, lower employee well-being;
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24 **Prevention-focused adapt strategy**

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26 As COVID-19 has been causing widespread disruptions to normal work routine,
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28 prevention-focused leaders support resilience and adaptivity in this time of disturbance. The
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30 core of prevention-focused adapt strategy is engaging workforce in learning and making
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32 improvements, thus preventing potential damages from future disturbances. Adaptive
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34 leadership identifies learning opportunities from current disruptions and setbacks. They
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36 energise the team and take quick actions in the midst of current disrupted situations. Instead of
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38 placing blame for negative outcomes, they encourage open discussions on the possible
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40 learnings. Adapt leadership behaviours promote double-loop learning to identify new insights
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42 and innovative breakthrough solutions. As a result, the team might re-evaluate the current
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44 safety program and concentrate on improvement that would elevate the organisation to prevent
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46 future crises from happening or reduce their intensity.
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51 The heart of prevention-focused adapt strategy is understanding the disruptions and
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53 improving the capabilities in dealing with the current turbulence and being able to respond to
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55 the same in the future with reduced loss and damage. Therefore, prevention-focused adapt
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57 strategies encourage the clarity of purpose in allocating and committing resources to learning
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3 from the current crisis. With an adapt strategy, prevention-focused leaders use the pandemic as
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5 a catalyst to promote active learning and continuous improvement in organisations.
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7 Consultation is a good learning practice, during which team members could communicate on
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9 their understandings of current working routines, raise concerns and discuss on a better way of
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11 working. In response to the changes happening at workplace, prevention-focused leaders guide
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13 and direct organisations to work toward an agile operating model with transparent
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15 communications and increased clarity of role accountability (De Smet *et al.*, 2021). Adaptive
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17 leaders make clear team's plan for the future, changes needed and requirements for each team
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19 member, thus reducing ill-defined or ambiguous work. In consequence, the enhanced clarity of
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21 goals and streamlined decision making process could not only support the organisation during
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23 the current turbulence, but also prepare organisations with greater resilience to adapt to the
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25 future. Previous studies reported the benefits of improved role clarity in increasing job
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27 satisfaction and engagement, reducing job stress and burnout (Maslach and Jackson, 1984;
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29 Ivancevich and Donnelly, 1974). Thus, this study proposes that:

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35 H2: A perceived increase of adapt strategy is associated with higher role clarity, and in
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37 turn, improved employee well-being;

38 39 40 **Method**

41 42 **Retrospective design and sample**

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44 The unexpected and rapid onset of the pandemic limited the degree to which researchers
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46 conducting this project could implement appropriate longitudinal designs to track changes in
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48 leadership behaviours and employee outcomes. Therefore, we adopted a retrospective design
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50 in which participants reported the degree they perceived leadership practices had changed since
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52 the commencement of the pandemic. Retrospective approach has been widely used in recent
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54 COVID-19 related studies (Liang *et al.*, 2020; Ran *et al.*, 2020). In our retrospective approach,
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56 respondents were asked to answer the same set of questions twice. They were first asked to
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3 report how they perceived safety leadership strategy and work characteristics at present. They
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5 were then asked how they perceived the changes of safety leadership strategy and work
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7 characteristics comparing to the situation before COVID-19. With a retrospective approach,
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9 this study collected perceptions of the survey participants.
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12 Participants in this study were recruited through Prolific, a UK based research service
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14 provider for the recruitment of online survey respondents. Pre-screening questions were set to
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16 search for participants working in safety-related industries. The selected industry categories
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18 included: construction, government and public administration, healthcare and social assistance,
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20 mining, manufacturing, transportation, and warehousing. Initially 530 people responded, and
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22 after removing 15 careless responses (identical answers to questions worded in the opposite
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24 directions and obvious patterns in the responses), 515 valid responses were kept in the final
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26 sample set. Among the respondents, 57% of them are male, 43% were female. The profile of
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28 the respondents is shown in Table 1.
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33 <Table 1 here>
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35 Measures

36 Prevention-focused leadership strategy

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38 Two types of prevention-focused leadership strategy were investigated: defend strategy
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40 and adapt strategy. They were each measured with three items developed in Casey *et al.* (2019).
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42 The current level of safety leadership strategy was assessed by asking participants to evaluate
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44 the measurement statements against a Likert scale from “1= Strongly disagree” to “5= Strongly
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46 Agree”. One sample item of the current use of defend strategy was, “After COVID-19
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48 happened, people in this team expect each other to clearly identify the risks to health and
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50 safety”. The increased or decreased use of safety leadership strategy was assessed by asking
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52 participants to evaluate the same measurement statements in comparison to the situation before
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54 COVID-19. To reflect the perceived changes since the commencement of COVID-19,
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respondents were asked to comment on the leadership practice from “1= Absolutely less” to “5= Absolutely more”. Each set of answers was scored separately, thus yielding a present score and a change score. Cronbach’s alpha of changes in adapt strategy was 0.762, current adapt strategy was 0.759; Cronbach’s alpha of changes in defend strategy was 0.815, current defend strategy was 0.757. All of these values were larger than the threshold of 0.70 as suggested by Nunnally (1978).

Work characteristics

Two work characteristics: role clarity and workload were measured in this study. Role clarity level was measured with three items from Morgeson and Humphrey (2006), where a sample item was, “I have clear planned goals and objectives for my job”. Three items from Spector *et al.* (1998) were employed to measure workload level, one sample item was, “This week, my job required me to work very hard”. Similarly to the measurement of safety leadership strategy, current level of work characteristics was assessed by asking participants to indicate their perceptions after COVID-19 happened against a Likert scale from “1= Strongly disagree” to “5= Strongly Agree”. We measured changes in role clarity and workload by asking participants to indicate their perceived changes in comparison to the situation before COVID-19 from “1= Absolutely less” to “5= Absolutely more”. Each set of answers was scored separately, thus yielding a present score and a change score. Cronbach’s alpha of changes in role clarity level was 0.871, current role clarity level was 0.784. Cronbach’s alpha of changes in workload level was 0.840, current workload level was 0.800.

Well-being outcomes

Well-being outcomes were measured based on twelve items from Warr (1990), including items of both positive expression and negative expression. To obtain more stable parameter estimates and a simplified model in confirmatory factor analysis (CFA), the technique of item parcels was used. The twelve items were grouped into four indicators based

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3 on the nature of the measurement statements as shown in Table 2. Cronbach's alpha values of
4 well-being indicators ranged from 0.825 to 0.902, showing great reliability.
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7 8 **Results**

9 10 **Reliability and validity**

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12 The means, standard deviations and correlations among all the variables were obtained
13 with SPSS 26.0 and the results are shown in Table 2. Reliability of constructs was tested with
14 Cronbach's alpha and composite reliability (CR) with all the constructs having satisfactory CR
15 and Cronbach's alpha values larger than 0.70 (Hair *et al.*, 2010). Confirmatory factor analysis
16 (CFA) was conducted in Mplus (v7.4). CFA results of the measurement model, including 9
17 constructs with a total of 28 items showed good model fit (Chi-square= 790.141; df=307; CFI
18 = 0.927; TLI = 0.910; RMSEA = 0.055; and SRMR = 0.048). As shown in Table 3, the
19 hypothesized nine-factor model has a better fit than alternative models: model 1 combining
20 Adapt and Defend into one factor (Chi-square=836.145; df=315; CFI =0.921; TLI =0.905;
21 RMSEA =0.057; and SRMR =0.049); model 2 combining Role clarity and Workload into one
22 factor (Chi-square= 1394.980; df=315; CFI =0.836; TLI =0.803; RMSEA =0.082; and SRMR
23 =0.080); model 3 combining Δ Adapt, Δ Defend, Adapt and Defend into one factor (Chi-
24 square=1935.413; df=328; CFI =0.756; TLI =0.718; RMSEA =0.098; and SRMR =0.103);
25 model 4 combining Δ Role clarity, Δ Workload, Role clarity and Workload into one factor
26 (Chi-square=1909.085; df=328; CFI =0.760; TLI =0.723; RMSEA =0.097; and SRMR =0.120)
27 (Browne and Cudeck, 1992; Hu and Bentler, 1999). As shown in Table 4, all loadings relating
28 items to latent constructs were statistically significant ($p < 0.001$) with standardised values
29 larger than 0.5. Therefore, structure validity was supported.
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33 Additionally, the authors performed Harman's single factor analysis to rule out the
34 common method variance concern (Podsakoff *et al.*, 2003). Results in Table 3 showed that fit
35 indices were not adequate for the one-factor model (Chi-square=3688.680; df=343; CFI =0.491;
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3 TLI =0.439; RMSEA =0.138; and SRMR =0.144), indicating that common method variance
4 was not a substantive concern in this study.
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8 Discriminant validity was tested by comparing the square root of a variable's AVE and
9 its correlations with other variables. Table 2 shows that for all the constructs, the square roots
10 of AVEs are all higher than their correlations with other constructs. Except for the square root
11 of AVEs are all higher than their correlations with other constructs. Except for the square root
12 of AVEs are all higher than their correlations with other constructs. Except for the square root
13 of AVEs are all higher than their correlations with other constructs. Except for the square root
14 of AVE for Δ Adapt (0.72) was slightly lower than the correlation between Δ Adapt and Δ
15 defend (0.73). This was understandable as the different leadership strategies were distinct yet
16 highly correlated as suggested by Casey *et al.* (2019). Hence, the results above collectively
17 proved satisfactory reliability, structure validity, convergent and discriminant validity of the
18 measures in this data.
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32 33 **Path analysis**

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35 This analysis aimed to unpack the associations between two prevention-focused
36 leadership strategies and well-being outcome. Potential mediating pathways were tested in path
37 analysis with Mplus (v7.4). Bootstrap approach was used to identify all the significant
38 mediating paths with the 95% confidence interval estimates excluding zero (MacKinnon *et al.*,
39 2004). The direct and indirect pathways linking changes in leadership strategies to well-being
40 are shown in Table 5.
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49 From Table 5, it can be seen that the total effect from perceived changes in defend
50 strategy to well-being outcome is non-significant. However, both positive and negative indirect
51 pathways linking changes in defend strategy to well-being were found. Significant positive
52 links include: $\Delta D \rightarrow D \rightarrow WB$ ($\beta=0.034$, $p<0.05$), $\Delta D \rightarrow \Delta$ Role clarity $\rightarrow WB$ ($\beta=0.021$,
53 $p<0.05$); $\Delta D \rightarrow D \rightarrow$ Role clarity $\rightarrow WB$ ($\beta=0.015$, $p<0.01$); and $\Delta D \rightarrow \Delta$ Role clarity \rightarrow Role
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3 clarity \rightarrow WB ($\beta=0.007$, $p<0.05$). Significant negative path: $\Delta D \rightarrow \Delta$ Workload \rightarrow Workload
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5 \rightarrow WB ($\beta=-0.009$, $p<0.05$). Therefore, the associations between changes in defend strategy and
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7 employee well-being outcome are complex. On the one hand, the increase of defend strategy
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9 was linked to increase of workload, in turn reduced employee well-being. Hypothesis 1 was
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11 supported. On the other hand, evidence also supported a positive link between the increase of
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13 defend strategy and employee well-being, via the mediating roles of D (current defend practice),
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15 Δ Role clarity (the increase of role clarity in the workplace) and Role clarity (current role clarity
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17 level).

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21 Besides, it shows in Table 5 that there are four significant positive indirect paths from
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23 changes in adapt strategy to well-being outcome: 1) $\Delta A \rightarrow A \rightarrow$ WB ($\beta=0.026$, $p<0.05$); 2) Δ
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25 $A \rightarrow \Delta$ Role clarity \rightarrow WB ($\beta=0.029$, $P<0.01$); 3) $\Delta A \rightarrow A \rightarrow$ Role clarity \rightarrow WB ($\beta=0.014$,
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27 $p<0.01$); and 4) $\Delta A \rightarrow \Delta$ Role clarity \rightarrow Role clarity \rightarrow WB ($\beta=0.009$, $p<0.01$). Thus, perceived
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29 increase of adapt strategy was associated with increased employee well-being through different
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31 pathways. Significant mediators in the ΔA —WB relationship include A (current adapt
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33 practices), Δ Role clarity (changes in the role clarity) and Role clarity (current role clarity level).
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35 Hypothesis 2 predicted that increase in adapt strategy would be associated with a higher level
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37 role clarity in the workplace, and in turn enhanced employee well-being. Hypothesis 2 was
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39 supported. Figure 1 shows the significant paths from the conceptual model.
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45 <Figure 1 here>

46 47 48 49 Discussion

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51 Our study aimed to broaden the understanding of prevention-focused leadership
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53 strategies by exploring their associations with employee well-being in times of crisis, such as
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55 COVID-19 pandemic. Both theoretical contributions and practical implications of the findings
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57 are discussed as follows.
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Theoretical contributions

This study added empirical evidence to the growing base of theoretical work addressing regulatory focus in the safety management field. Further theoretical integrations can consider psychological mechanisms through which different types of safety leadership practices could influence workplace safety outcomes in a holistic fashion. Prevention-focused safety leadership practices were found effective in providing opportunities to reduce workplace role conflict and ambiguity by incorporating more clarity on the tasks and safety goals. More specifically, our study highlighted the links between prevention-focused leadership (both defend and adapt strategy) and a higher level of role clarity in the workplace, and in turn empowered employee well-being. Mediating pathways were identified from Table 5: $\Delta A \rightarrow \Delta$ Role clarity \rightarrow WB; $\Delta A \rightarrow A \rightarrow$ Role clarity \rightarrow WB; $\Delta A \rightarrow$ Role clarity \rightarrow Role clarity \rightarrow WB; $\Delta D \rightarrow \Delta$ Role clarity \rightarrow WB; $\Delta D \rightarrow D \rightarrow$ Role clarity \rightarrow WB; $\Delta D \rightarrow \Delta$ Role clarity \rightarrow Role clarity \rightarrow WB. By applying defend strategy, safety leaders emphasised the importance of strictly following safety rules and regulations. Employees received regular reminders and clear instructions to fulfil safety requirements. Clear feedback was provided to employees on their performance, so that swift corrective actions could be made if some requirements were not met (McAlear, 2020). As a result, employees could have a clear understanding and improved clarity on the importance of their tasks, responsibilities of their role and optimised process to ensure workplace safety. By applying adapt strategy, safety leaders gathered the team together in a psychologically safe environment for open discussions. Adaptive leaders can lead the team to take deep reflections and re-evaluate their safety visions and current working routines. They encourage communications on incremental improvement to prepare the organisation for future crises. Through these deep learning and consultation processes, employees could have a refreshed vision on the safety goals and deeper agreement on their roles and accountabilities in the team, resulting in more clarity in the disrupted work environment. In times of turbulence

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3 and uncertainty, enhanced clarity and reduced ambiguity are critical for positive well-being
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5 outcomes.
6

7
8 Our second theoretical contribution is to raise the awareness of the potential of
9
10 prevention-focused practices in increasing employee workload. When safety goals were
11
12 framed to minimise negative safety outcomes, self-regulatory focus theory predicts people to
13
14 be more vigilant and take extra efforts to fulfil safety regulations and avoid errors. However,
15
16 this might cause unintended workforce well-being outcomes as this study uncovered the
17
18 mediating role of workload in the negative ΔD —WB relationship. In Table 5, the pathway Δ
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20 $D \rightarrow \Delta$ Workload \rightarrow Workload \rightarrow WB was presented. It indicated that increased defend strategy
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22 was linked to a higher level of workload, and thus reduced well-being. As more defend strategy
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24 initiatives being deployed during the pandemic, risk assessments and mitigation measures were
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26 conducted more frequently than ever (Halawi *et al.*, 2020). These safety precautions may fall
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28 short in their desired goals but lead to a surge in demand and physical fatigue, due to additional
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30 shifts, prolonged use of personal protective equipment (PPE) and the need to frequently change
31
32 PPE, etc. Moreover, mental workload of the employees could also be increased because of
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34 intensive concentration on potential mistakes and errors (Chen *et al.*, 2020). Working in a fault-
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36 finding environment and constantly looking for potential mistakes might even result in mental
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38 breakdown (Sasangohar *et al.*, 2020). Thus, workload surges caused by defensive responses to
39
40 the pandemic might pose threats to employee well-being. This study provided evidence to
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42 support the argument that prevention-focused strategies should be complemented by measures
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44 to support personal initiative and thriving.
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51 Thirdly, our research supports that increases of prevention-focused leadership strategies
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53 (both defend and adapt strategy) were positively associated with employee well-being through
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55 the enhanced perceptions of leadership in the workplace. In Table 5, mediating pathways
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57 $\Delta A \rightarrow A \rightarrow WB$ and $\Delta D \rightarrow D \rightarrow WB$ were presented. Responding to the disruptions to daily work
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3 routine, increased prevention-focused leadership aimed to deal with heightened workplace
4 risks during the pandemic. The application of leadership practice, such as conducting more
5 regular risk assessments, organising team consultations could collectively make the role of
6 safety leaders more salient. With this increased perception of safety leadership in place,
7 employees would be ensured that their leaders are more committed in this health and safety
8 crisis, resulting in beneficial outcomes to their well-being.
9

17 **Practical implications**

19 This research focused on the rarely studied topic of prevention-focused leadership, and
20 how prevention strategies are related to employee well-being. Based on the findings for
21 prevention-focused defend and adapt strategies, this study suggests the following practices that
22 might shape employee well-being in a time of turbulence.
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28 **Lead for vigilance**

30 Health and safety risks during the COVID-19 pandemic require extra vigilance in the
31 workplace. Essentially, prevention-focused leadership has a strong emphasis on mistakes and
32 risks avoidance in vigilance and resilience. The findings of this study demonstrated the benefits
33 of prevention-focused defend strategies in improving role clarity, in turn well-being outcomes.
34 Prevention-focused defend leadership underscores the strict compliance of safety regulations
35 and more clarity in following various preventive precautionary actions. With a preventive
36 climate, defend strategies could lead to heightened vigilance at work, thus improve safety
37 awareness to detect underlying threats, identify anomalies and prepare for potential disruptions.
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40 This study suggests the following practices of vigilant leadership: 1) communicate
41 safety standards and enable workers to be clear about and adhere to safety procedures; 2)
42 improve a vibrant safety culture of hazard identification and mitigation; 3) build accountability
43 to ensure a clear understanding of tasks and responsibilities; 4) monitor and provide timely
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3 feedback to enhance employee perceptions of management safety commitment; and 5) provide
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5 safety training for risks identification, assessment and other precautionary actions.
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8 **Lead for adaptability**

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10 As businesses recover from COVID-19-related disruptions and navigate to the next
11 stage of recover, adaptive leaders are needed to orient the team and build competitive
12 advantages for a strong post-pandemic recovery (De Smet *et al.*, 2020; Mysore *et al.*, 2021).
13
14 Adaptability is the necessary capability for organisations to operate within uncertainty, yet
15 being adaptive in periods of disruptions and turbulence can be challenging (Hoff and Burke,
16 2017). Thus, adaptive leadership practices are important to engage workforce to learn from the
17 current challenges and exploring new ways for improvement. Prevention-focused adaptive
18 leaders recognise both the effectiveness and limitations of the current safety management
19 program. They encourage employees to adjust their approach to work, acquire new skills and
20 proactively seek new opportunities to improve the current safety management processes, with
21 the goal of effectively practicing prevention and minimising risks. Thus, prevention leadership
22 strategies with an adaptability focus foster a culture of learning and prevention, which ensures
23 organisations avoid risks and also achieve growth and positive safety performance.
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40 The following prevention-focused adaptive leadership practices should be valuable in
41 the time of this pandemic: 1) encourage adjustment and promote new prevention practices in
42 the current disruptions; 2) identify learning opportunities and highlight safety objectives to
43 minimise risks; 3) be flexible and open to suggestions on improving safety strategies through
44 formal and informal channels; 4) establish effective and regular communications about safety
45 visions and policies; and 5) cultivate learning mindset of the employees and nurture a culture
46 of prevention for a more adaptable organisation.
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56 **Lead with compassion**

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3 Despite the potential for defend strategies to improve clarity of purpose in the team,
4
5 this study also revealed that increase of defend strategies might heighten employees' workload
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7 and decrease their well-being. To minimise risks, stricter compliance to safety procedures is
8
9 required, consistent with the need for COVID-19 specific safety procedures. Under these
10
11 conditions, employees can experience greater work demands and pressure. Moreover, a focus
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13 on potential failures and hazards can increase employee mental load and stress. Thus, in the
14
15 midst of ongoing threat, defend strategies might be complemented by compassion in leadership.
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20 Compassionate leadership actions include: 1) be cognizant of the situations, challenges
21
22 and difficulties of employees and how these might affect individuals differently; 2) provide
23
24 timely feedback and support to ensure that employees feel supported in times of uncertainty;
25
26 3) establish mindful and authentic communications to create opportunities for employees to
27
28 express themselves; 4) show gratitude and appreciation so that employees feel valued and
29
30 recognised; and 5) foster belonging and inclusion in the organisation environment to support
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32 employees get through difficult times.
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34

35 **Limitations and future direction**

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37 Despite our contributions in this work, we acknowledge the limitations and suggest
38
39 future research that could complement this study. The first limitation is retrospective cross-
40
41 sectional design. The unexpected and rapid onset of the pandemic limited the degree to which
42
43 researchers could implement appropriate longitudinal designs to track changes in leadership
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45 behaviours and employee outcomes. Inadequate information on respondents' pre-crisis
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47 situation makes retrospective approach widely used in recent COVID-19 related studies (Liang
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49 *et al.*, 2020; Li and Griffin, 2022). Although the benefits of retrospective approach were
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51 identified, there are still concerns over recall accuracy and cognitive demands for respondents
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53 (Hipp *et al.*, 2020). Further research may consider using experimental designs to validate the
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55 impact of prevention-focused leadership on well-being outcomes. In addition, the limitation of
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3 using Prolific to collect survey responses, such as lack of control of the respondents and rushed
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5 answers might happen. Thus, measures were taken with multiple screening processes to ensure
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7 the data quality and remove rushed responses. Based on the findings in this study, we
8
9 highlighted suggestions on safety leadership practice to support safety leaders in this crisis and
10
11 beyond. Future qualitative studies can be conducted onsite to better understand how safety
12
13 leadership might shape workplace well-being outcomes.
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16 17 **Conclusions**

18
19 As the global COVID-19 pandemic caused exceptional health and safety risks, the
20
21 prevalence of mental health problems has skyrocketed (Graham and Woodhead, 2020). To
22
23 respond to these challenges, prevention-focused leadership strategies are needed to ensure
24
25 compliance of workplace safety procedures and COVID-19 health instructions. However, it
26
27 remains unclear how prevention-focused leadership might link with employee well-being.
28
29 Thus, this study aims to address this gap. Increases of the two leadership strategies: adapt and
30
31 defend were found associated with positive well-being outcome by increasing employees'
32
33 perceptions of leadership and by improving role clarity in the workplace. Notably, evidence
34
35 also supported that increase of defend strategy was linked to reduced employee well-being
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37 through intensified workload. Thus, our study supports the notion that leadership in a crisis
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39 requires a balanced combination of different strategies, with building a thriving workforce
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41 taken into consideration. As leadership challenges have been highlighted in the current
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43 COVID-19 pandemic, this study suggests leadership practices that might shape employee well-
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45 being in this time of crisis.
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Table 1. Profile of the respondents.

Education background	Percentage (%)	Working experience	Percentage (%)
High school graduate, diploma or the equivalent	16.5	Less than 5 years	35.5
Trade/technical training	9.3	6-10 years	26.0
Bachelor's degree	45.4	11-15 years	12.0
Master's degree	16.3	16-20 years	6.5
Others	12.5	More than 20 years	20.0
Total	100.0	Total	100.0
Industry	Percentage (%)	Country	Percentage (%)
Mining	1.0	North America	58.4
Construction	13.2	South America	2.7
Transportation	12.6	Europe	30.5
Administrative and support service activities	17.7	Oceania	6.2
Human health and social work activities	33.8	Others	2.2
Others	21.7		
Total	100.0	Total	100.0

Table 2. Mean, SD, square roots of AVEs and correlations.

Variable	Mean	SD	Cronbach's alpha	CR	1	2	3	4	5	6	7	8
1. Δ Adapt	3.38	0.75	0.76	0.76	0.72							
2. Δ Defend	3.35	0.81	0.82	0.84	0.73**	0.8						
3. Adapt	4.08	0.79	0.76	0.76	0.25**	0.19**	0.71					
4. Defend	3.83	0.89	0.76	0.76	0.23**	0.24**	0.68**	0.71				
5. Role clarity	4.26	0.74	0.78	0.80	0.13**	0.09*	0.39**	0.42**	0.75			
6. Δ Role clarity	3.31	0.71	0.87	0.82	0.34**	0.32**	-0.02	0.12**	0.16**	0.77		
7. Workload	3.44	1.04	0.80	0.81	0.06	0.06	0.11*	0.09*	0.02	0.06	0.77	
8. Δ Workload	3.26	0.84	0.84	0.84	0.21**	0.22**	-0.03	-0.01	-0.01	0.17**	0.35**	0.80
9. WB	3.29	0.75	0.901	0.71	0.15**	0.14**	0.33**	0.37**	0.42**	0.18**	-0.15**	-0.10*

** . Correlation is significant at the 0.01 level (2-tailed).

* . Correlation is significant at the 0.05 level (2-tailed). The square roots of AVEs (in bold text) are reported at diagonal.

Table 3. Fit indices for measurement models.

Model description	Chi-square	df	Change in Chi-square	RMSEA	CFI	TLI	SRMR
Proposed: Nine-factor model	790.141	307		0.055	0.927	0.910	0.048
Alternative 1: Eight-factor model (Adapt and Defend as one factor)	836.145	315	46.004***	0.057	0.921	0.905	0.049
Alternative 2: Eight-factor model (Role clarity and Workload as one factor)	1394.980	315	604.839***	0.082	0.836	0.803	0.080
Alternative 3: six-factor model (Δ Adapt, Δ Defend, Adapt and Defend as one factor)	1935.413	328	1145.272***	0.098	0.756	0.718	0.103
Alternative 4: six-factor model (Δ Role clarity, Δ Workload, Role clarity and Workload as one factor)	1909.085	328	1118.944***	0.097	0.760	0.723	0.120
One-factor model	3688.680	343	2898.539***	0.138	0.491	0.439	0.144

Note: df = degrees of freedom. ***p < .001

Table 4. CFA examination.

Construct	Measurement statement	Factor loading	P-Value
Adapt			
	After COVID-19 happened:		
A1	Our team reflects on problems with work to prevent the same things from happening again	0.702	***
A2	As a team, we expect each other to speak up when we notice something is unsafe.	0.770	***
A3	Our supervisor expects this team to confront unexpected problems and minimize their impact.	0.674	***
Δ Adapt			
	Compare with situation before COVID-19:		
Δ A1	Our team reflects on problems with work to prevent the same things from happening again	0.693	***
Δ A2	As a team, we expect each other to speak up when we notice something is unsafe.	0.779	***
Δ A3	Our supervisor expects this team to confront unexpected problems and minimize their impact.	0.686	***
Defend			
	After COVID-19 happened:		
D1	People in this team expect each other to clearly identify all the risks to health and safety	0.740	***
D2	Our supervisor reacts strongly when people fail to uphold an important health and safety responsibility	0.704	***
D3	When work is critical, this team's compliance with rules and standards is closely monitored	0.693	***
Δ Defend			
	Compare with situation before COVID-19:		
Δ D1	People in this team expect each other to clearly identify all the risks to health and safety	0.875	***
Δ D2	Our supervisor reacts strongly when people fail to uphold an important health and safety responsibility	0.741	***
Δ D3	When work is critical, this team's compliance with rules and standards is closely monitored	0.773	***
Role clarity			
	After COVID-19 happened:		
RC1	I have clear planned goals and objectives for my job.	0.754	***
RC2	I know what my responsibilities are.	0.689	***
RC3	I know exactly what is expected of me.	0.817	***
Δ Role clarity			
	Compare with situation before COVID-19:		
Δ RC1	I have clear planned goals and objectives for my job.	0.884	***
Δ RC2	I know what my responsibilities are.	0.693	***
Δ RC3	I know exactly what is expected of me.	0.731	***
Workload			
	After COVID-19 happened:		
W1	This week, my job required me to work very hard.	0.660	***
W2	This week, my job left me with little time to get things done.	0.871	***

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3	W3	This week, there was a great deal left to be done in my	0.748	***
4		job.		
5	Δ Workload			
6		Compare with situation before COVID-19:		
7				
8	Δ W1	This week, my job required me to work very hard.	0.749	***
9	Δ W2	This week, my job left me with little time to get things	0.826	***
10		done.		
11	Δ W3	This week, there was a great deal left to be done in my	0.828	***
12		job.		
13	Well-being			
14		At work, over the past 4 weeks how often have you felt:		
15				
16	WB1	Contented	0.723	***
17		Calm		
18		Relaxed		
19	WB2	Tense	0.578	***
20		Uneasy		
21		Worried		
22				
23	WB3	Enthusiastic	0.629	***
24		Optimistic		
25		Cheerful		
26	WB4	Depressed		***
27		Gloomy		
28		Miserable	0.542	
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Table 5. Direct and indirect path coefficients.

Pathways	Bootstrapping Effect	SE	Percentile 95% CI	
			Lower	Upper
➤ $\Delta A \rightarrow WB$				
Total	0.084	0.057	-0.028	0.199
Direct	0.013	0.056	-0.098	0.117
Indirect				
• $\Delta A \rightarrow A \rightarrow WB$	0.026*	0.014	0.001	0.053
• $\Delta A \rightarrow \text{Role clarity} \rightarrow WB$	0.005	0.018	-0.030	0.043
• $\Delta A \rightarrow \Delta \text{Role clarity} \rightarrow WB$	0.029**	0.014	0.006	0.061
• $\Delta A \rightarrow \text{Workload} \rightarrow WB$	0.006	0.012	-0.015	0.033
• $\Delta A \rightarrow \Delta \text{Workload} \rightarrow WB$	-0.006	0.006	-0.020	0.005
• $\Delta A \rightarrow A \rightarrow \text{Role clarity} \rightarrow WB$	0.014**	0.005	0.005	0.025
• $\Delta A \rightarrow \Delta \text{Role clarity} \rightarrow \text{Role clarity} \rightarrow WB$	0.009**	0.005	0.002	0.020
• $\Delta A \rightarrow A \rightarrow \text{Workload} \rightarrow WB$	-0.004	0.003	-0.010	0.000
• $\Delta A \rightarrow \Delta \text{Workload} \rightarrow \text{Workload} \rightarrow WB$	-0.007	0.005	-0.020	0.002
➤ $\Delta D \rightarrow WB$				
Total	0.062	0.057	-0.049	0.179
Direct	0.019	0.056	-0.091	0.130
Indirect				
• $\Delta D \rightarrow D \rightarrow WB$	0.034*	0.015	0.007	0.068
• $\Delta D \rightarrow \text{Role clarity} \rightarrow WB$	-0.021	0.019	-0.062	0.015
• $\Delta D \rightarrow \Delta \text{Role clarity} \rightarrow WB$	0.021*	0.011	0.004	0.048
• $\Delta D \rightarrow \text{Workload} \rightarrow WB$	0.005	0.012	-0.017	0.030
• $\Delta D \rightarrow \Delta \text{Workload} \rightarrow WB$	-0.008	0.008	-0.026	0.004
• $\Delta D \rightarrow D \rightarrow \text{Role clarity} \rightarrow WB$	0.015**	0.005	0.007	0.028
• $\Delta D \rightarrow \Delta \text{Role clarity} \rightarrow \text{Role clarity} \rightarrow WB$	0.007*	0.004	0.001	0.016
• $\Delta D \rightarrow D \rightarrow \text{Workload} \rightarrow WB$	-0.001	0.003	-0.008	0.003
• $\Delta D \rightarrow \Delta \text{Workload} \rightarrow \text{Workload} \rightarrow WB$	-0.009*	0.005	-0.022	-0.001

Note: ΔA stands for Δ Adapt; ΔD stands for Δ Defend; WB stands for well-being.

* $p < 0.05$; ** $p < 0.01$.

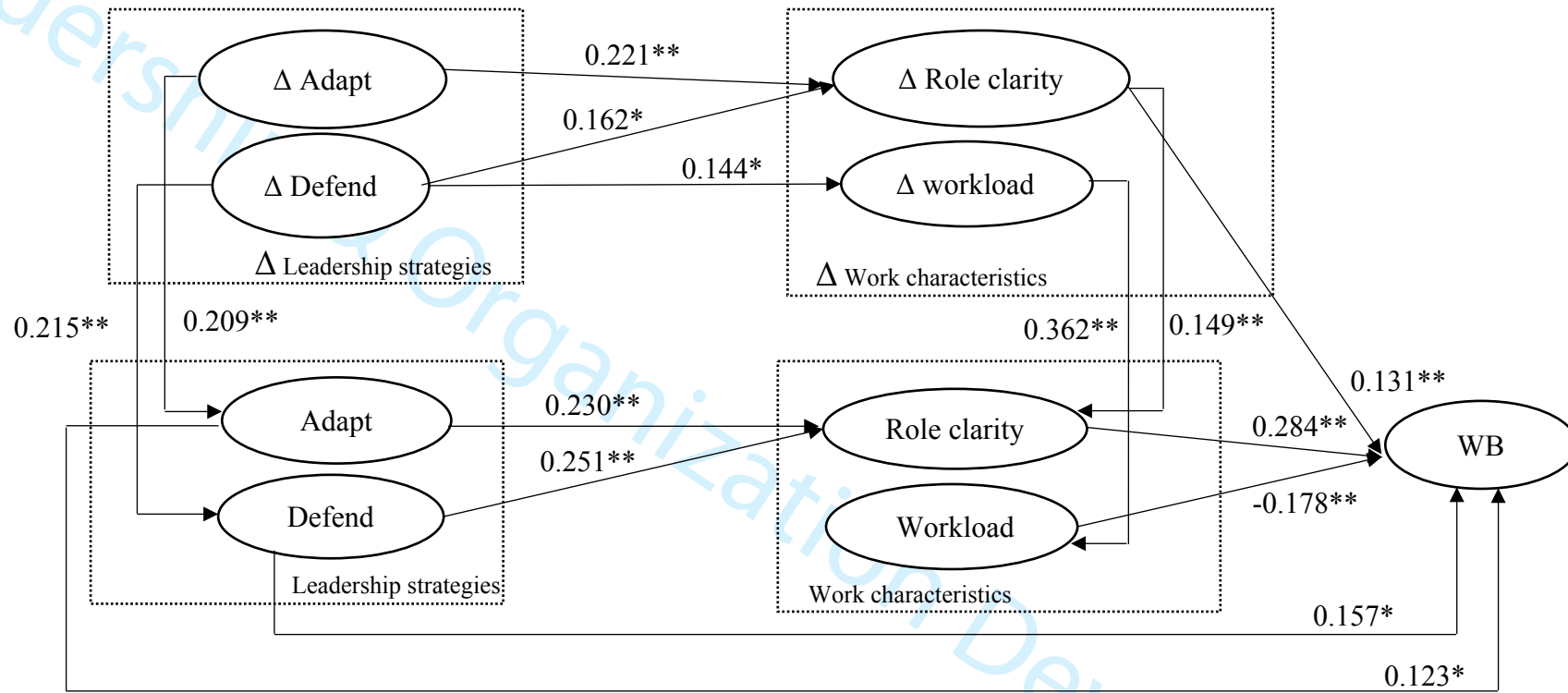


Figure 1. Significant path analysis results

Note: For a parsimonious model construction, this study did not consider the cross effects between Δ Leadership strategies and Leadership strategies as well as between Δ Work characteristics and Work characteristics. (e.g. the link between Δ Adapt with Defend).