COMMENTARY

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Risk, the COVID-19 pandemic, and organisations: Extending, repurposing, and developing theory

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Abstract

The COVID-19 pandemic has challenged and changed organisations. While the pandemic has brought opportunities for business in some sectors, such as information and communication, and for people who enjoy the flexibility they gain from home-based or hybrid work arrangements, the realisation of benefits for individuals and organisations is uncertain over longer time periods and distributed unevenly across the workforce. Thus, the pandemic situation has been a trigger, albeit an unwelcome one, for revising our theorising about organisational risk. We build on the articles within our special section and develop a perspective on how to continue the development of new theoretical insights. First, we examine how existing theories can be extended to encompass organisational risk. We focus on theories of organisational culture to do so. Second, we discuss ways that existing theories can be repurposed to address important challenges. We illustrate our points using paradoxical leadership theory and theories of creativity. Third, we reflect on ways to develop new theorising by exploring multilevel modelling and the microfoundations of organisational risk. Fourth, we reflect on methods. In doing so, we pave the way for future studies that will enrich our understanding of organisational risk and contribute to preparations for future crises.

KEYWORDS
creativity, culture, leadership, microfoundations, research methods, risk

Practitioner Points

- Planning for pandemics and other crises requires risks to be organised.
- Organising risks involves identifying them and reducing the likelihood they will materialize as harm.
- Preparedness for crises benefits from extending, repurposing and developing models of risk and organisation.
- Insights from studies of culture, creativity, leadership and the microfoundations of organisational risk provide insights into ways that understanding the organisation of risks can be developed.

INTRODUCTION

As we write this article in June 2023, there have been in excess of 767 million cases of COVID-19 worldwide and close to seven million deaths (World Health Organization, 2022). The concept of risk has been essential to the strategic management of the pandemic and has also taken centre stage in organisations as people reconsider health and safety, work–family concerns, virtual work, precarity, leadership, human resources policies, and careers in light of disease-related hazards (Rudolph et al., 2021). Yet, organisational responses have been varied and fragmented, triggering calls for new theorising in organisational psychology as we move beyond the COVID-19 pandemic (Pérez-Nebra et al., 2021).

In putting together our special section on organisational risk and the COVID-19 pandemic, we have selected papers that represent a range of perspectives on how people and organisations have coped and been challenged by their emotionally charged and hazardous circumstances. We have reflected on these studies, as well as on the extant risk research literature, in our editorial. We use the core themes offered by the special section as foundations for developing ideas about new ways to theorise about risks.

With this article, we offer a forward-looking perspective on theorising about organisational risk. While the COVID-19 pandemic is one form of crisis, there will be future pandemics and other crises. Taking a prospective view "refers to how organisations identify risks that may materialise in the future to prepare for them" (Hardy et al., 2020, 1035). To achieve these outcomes, we consider how psychological theories can be extended, repurposed, and developed to enrich theorising and generate new insights that are beneficial for people and organisations.

In doing so, we take a broad view of both risks and organisations. We argue that there are important connections between theorising about the risks in safety-critical organisations, such as nuclear power plants, and theorising about other forms of organisational risks, such as financial and reputational risks. Such connections rest on the common premise that organisations construct and handle risks in relation to the duality of benefits and harm (Bednarek et al., 2019). Organisations that operate in hazardous environments typically focus heavily on safety, particularly when managing the risks associated with organisational activities is essential to their business. Organisations that operate in environments where the main risks are reputational, financial, and psychosocial, such as domains heavily dependent on knowledge work, often assume such risks are acceptable to some degree if benefits are to be achieved. In any type of organisation, the handling of risks can benefit from a forward-looking approach as the pandemic has demonstrated (Aven & Zio, 2021). Contingency planning on the outbreak of a health care emergency, for example, is core to all organisations that must handle risks (Bryce et al., 2020).

EXTENDING THEORIES

The impact and disruption of the COVID pandemic has created opportunities for organisational psychologists to extend existing theories. One such example is organisational culture which is "the

pattern of basic assumptions that a given group has invented, discovered, or developed in learning to cope with its problems of external adaptation and internal integration – a pattern of assumptions that has worked well enough to be considered valid and, therefore, to be taught to new members as the correct way to perceive, think, and feel in relation to those problems" (Schein, 1983, 14). Connecting the concepts of culture and risk illuminates the risk-related norms and beliefs that shape individual and collective thoughts and behaviours (Giorgi et al., 2015). What have we learnt about culture through the pandemic?

First, culture can change quickly when there is an existential threat to the organisation, change is supported and enabled, and when people understand exactly how they can help. If we consider the mass change in culture during the pandemic, which is arguably the largest behavioural intervention that has occurred in most people's lifetimes, shifts in working patterns that might normally take years to achieve occurred in weeks and months. Examples include people collaborating virtually, absorbing new priorities and opportunities, working from home, changing everyday workplace behaviours, finding ways to improve pandemic safety, moving processes online, and many other responses. Research on culture has considered how long it takes for a shift in corporate culture to occur (Boyce et al., 2015), and the pandemic shows that, when people see a clear and present danger to them and their firm, it can be fast. Of course, the situation was unusual, and people's organisational behaviour was tied to their well-being and that of their co-workers. Nonetheless, the pandemic shows that when people see a compelling reason for culture change, and the organisation supports this and provides ways to enact alternative ways of working, new practices are innovated and developed. Indeed, because organisations have found it hard to make a similarly compelling reason for people to switch back, the culture shifts on working practices that have arisen through the pandemic have become baked in and difficult to reverse.

Second, the concept of *risk* became prominent in the culture of everyone's lives. Research on safety culture has long examined the safety versus productivity trade-off: this captures the tension that people working in safety-critical contexts experience when, in pursuit of productivity, they must take a risk (e.g., cutting a corner; Guldenmund, 2000). This trade-off became a common experience across organisations during the pandemic, from policy makers to executives, unit managers to frontline employees. It was highly consequential, shaping the delivery of education, finance, transport, manufacturing, retail etc. For health care providers, they had to both consider safety versus risk trade-offs in their day-to-day activities (e.g., prioritising intensive care beds) and in relation to themselves (e.g., avoiding the disease). Thus, every organisation had to find where, within its culture, the balance between prioritising pandemic safety and delivering services lay. This was shaped by, alongside the law, the essentiality of services being provided, possibilities to make them COVID-safe, internal dynamics, and feasibility of being COVID-safe. Interestingly, the pandemic both shows the fundamental importance of ideas within safety culture theory for understanding organisations – for instance on the values and norms and enabling factors that shape risk-related behaviours – and also develops it. For example, in terms of values and behaviours adjusted as the pandemic continued, and disruption worsened, and also where rules and compliance created other societal risks and problems (e.g., delays of health care treatments).

Finally, as discussed above, the pandemic illustrated the effectiveness of behavioural change interventions and their impact on culture and behaviour. For example, in terms of direct interventions to change health and safety-related behaviours, refocussing of values (e.g., on employee and stakeholder well-being), and also nudges and more implicit approaches to altering behaviour. For culture research, these interventions must be closely studied to understand their positive effects in terms of shifting culture (e.g., values, norms, behaviours) as well as unintended outcomes and negative consequences. Moreover, new concepts, such as building a culture of organisational resilience (responding to and recovering from threats), potentially emerge through the pandemic (Bryce et al., 2020).

In conclusion, and using the concept of organisational culture as an example, we can see how the COVID-19 pandemic has potential to alter theories and understandings within occupational and organisational psychology. These include re-theorising how culture change occurs, the impact of principles of safety culture in all workplace domains, and the effectiveness of culture change interventions.

REPURPOSING THEORIES

The papers in this special section have highlighted the importance of novel applications of existing theories to understanding risks and organising. Notably, well-established theories of emotions and their appraisal have been applied to the pandemic situation to enhance understanding of well-being (Wang et al., Forthcoming) and behaviour (Shen et al., Forthcoming). We have taken inspiration from these studies to extend thinking about how to repurpose other theories. We focus on paradoxical leadership theory and theories of creativity to illustrate how such repurposing could contribute to expanding theorising about risks.

Paradoxical leadership

Risk in the modern era has been described as a paradox characterized by tensions arising from simultaneous attempts to challenge and control the future (Zinn, 2016, 2020). Social and need-led shifts have increased acceptability of specific risks (e.g., genetically modified crops) to address specific requirements (e.g., increased food production; Zinn, 2016). The pandemic has created and exacerbated a range of organisational and workplace tensions, such as the need for essential workers in sectors such as health care and transportation to continuing working while keeping safe, the continued participation in work while attending to other demands such as caring for family members or home-schooling children. Lockdown experiences prompted learning and unlearning as knowledge about the risks and ways to prevent harm developed. Moreover, managers were required to set direction while considering employees' concerns and suggestions, to consider long-term interests as well as short-term circumstances, and to be proactive as well as reactive (Giustiniano et al., 2020).

One approach to theorising about such paradoxes is to focus on leaders who have a key role in preparing for, and navigating crises, and reducing their harmful effects on organisations. Paradoxical leadership theory (Zhang et al., 2015) reconceptualizes and reconciles the seemingly competing interests that leaders need to address, such as the tensions between uniformity, as expressed in identical treatment to convey fairness, and individualisation that recognises the value of specific skills (Zhang et al., 2021). Paradoxical leadership is supported by individual characteristics, notably holistic thinking that involves integrating complex ideas (Pan & Sun, 2018), and organisational structures characterised by decentralised decision-making and open communication that allow expression of preferences (Zhang & Han, 2019).

Repurposing tenets of paradoxical leadership theory (Zhang et al., 2015) addresses tensions concerning the organisation of risk. Paradoxical leaders' capability to engage in a range of behaviours and integrate ideas contributes to creating environments where people can speak up and have their ideas translated into actions (Noort et al., 2019). Moreover, leaders who think holistically and apply conceptual integration skills have capabilities to reduce tensions between autonomy and control (Lee et al., 2021) by balancing influence and discretion, for example, setting clear goals and enabling employees to determine how they do their work (Fürstenberg et al., 2021). These processes have relevance in high-reliability organisations, where serious operational risks are routinely handled through leadership activities and organisational capacities that enables the simultaneous coexistence of hierarchical and standardised, and locally flexible and adaptive, modes of organising (Roberts, 1990; Schulman, 1993; Weick, 1987). Such capabilities also position other types of organisations to respond proactively to future crises.

Creativity

Theories of creativity offer another rich seam of repurposing potential. Creativity is the generation of ideas that are "attempts to develop and introduce new and improved ways of doing things" (Anderson et al., 2014, 1298). Individual-level theorising about creativity centres on the characteristics that drive idea generation and the contextual features that enhance such possibilities. The connections between emotions and creativity offer one line of enquiry that builds on the extant literature. Risk is an intensely

emotive phenomenon (Lupton, 2013). Studies of emotions in relation to risk have considered a range of perspectives, including emotions as influences on perceptions of risks (Loewenstein et al., 2001; Sjöberg, 2007; Slovic et al., 2004) and emotional insights as inputs to decision-making (Fenton-O'Creevy et al., 2011). The papers in this special section on the COVID-19 pandemic and organisational risk represent developments by showing how and when emotions shape employees' and leaders' responses to pandemic-related risks with consequences for well-being (Shen et al., Forthcoming) and supportive or abusive supervision (Wang et al., Forthcoming).

The many new insights into risk perceptions and risk-taking behaviour brought by prior studies of emotions can be complemented by complementary approach that considering the roles that emotions and creativity play in organising risks. Idea generation is central to creativity, with emotions influencing the idea generation process by fostering a flexible mode of thinking that enhances creativity (Bledow et al., 2013). Emotions also have a substantial influence on the information elaboration that follows idea generation. For example, information elaboration is enhanced by positions emotions, such as gratitude (Pillay et al., 2020) and inhibited by negative emotions, such as the fear of speaking up and personal risk that characterises low levels of psychological safety (Newman et al., 2017).

However, complexities surround the benefits of creativity. While creativity is a key source of competitive advantage and performance in some sectors, such as the film industry (Perry-Smith & Mannucci, 2017), the same principle does not necessarily apply to risk, particularly in hazardous settings where there are significant risks to health, well-being, and safety. Indeed, creative processes may generate risks through the uncoordinated proliferation and implementation of ideas. Notably, the organisational accretion of decentralised innovations that were implemented without effective risk oversight has been implicated in fatal failures in both the nuclear power and self-driving car industries (Macrae, 2010, 2022). One way to address such challenges is to link creative processes with the objectives of identifying risks and preventing their materialisation as harm. Repurposing theorising about idea generation and information elaboration to focus on the organisation of risk thus seems a fruitful area for future research.

A second line of enquiry arises from research that examines the connections between leadership and creativity. Studies that examine how and when leaders promote idea generation and information elaboration show that transformational leaders who provide vision, inspiration, individualised attention, and intellectual stimulation enhance possibilities for the expression of creative ideas (Koh et al., 2019) and knowledge sharing (Dong et al., 2017). Leaders who empower others give their work meaning, enable decision participation and so build employees' creativity, particularly when resources are available (Zhang et al., 2018). Proactive employees' creative potential is enhanced when leaders provide direction that channels motivation to achieve beneficial outcomes (Pan et al., 2018). Moreover, leaders who show humility by understanding their limitations, shortcomings, and mistakes, and showing appreciation of followers' input develop psychologically safe environments within teams where information sharing promotes creativity (Hu et al., 2018). We have seen that, during the COVID-19 pandemic, empowering leaders enhanced psychological empowerment and individual creativity (Siswanti & Muafi, 2020), while ethical leadership enhanced employee creativity through employees' perceptions of leader-member exchange and organisational ethical climate (Li et al., 2022).

In conclusion, creativity is a critical element of responses to pandemics and other forms of crises, with leadership being essential to the development of ideas that support and protect people and organisations. Uniting extant and emerging theorising about creativity, leadership, and risk provides opportunities to develop new frameworks for understanding and developing ways to organise risks.

DEVELOPING THEORIES

Theoretical growth is also achieved by developing novel approaches to modelling organisational risk that shed new light on how risks are identified and the potential for risks to realise as harm is reduced. The COVID-19 pandemic has highlighted how risk-handling systems have not functioned as well as expected due to the interconnected nature of risks (Aven & Zio, 2021). We draw on the literature

concerned with the microfoundations approach to understanding organisational phenomena with a view to stimulating new theorising that contributes to understanding organisations as risk systems.

The microfoundations of organizing risks

The microfoundations' perspective draws on Coleman's (1990) "bathtub" model, proposing that macro-explanations of macro-phenomena cannot distinguish between different explanations of organisational-level outcomes because the micro phenomena that underpin them are not unpacked. The bathtub model addresses this problem by layering micro- and macro-phenomena, with individuals at the base of the model (Little, 1991). Studies based on this model have examined top-down and bottom-up processes to develop the understanding of how contextual features of organisations influence individual and social processes that have emergent effects on organisational-level phenomena. Theorising covers a range of areas, including strategy (Foss & Pederson, 2016), innovation (Grigoriou & Rothaermel, 2014), organisational goals (Linder & Foss, 2018), and knowledge sharing (Foss & Pedersen, 2019). Unpacking cross-level processes is key to studies within this movement (Felin et al., 2015), with multilevel theorising being critical to advancing understanding (Kozlowski et al., 2013).

Although microfoundational approaches that focus on organisational risk are in their infancy, studies have focused on related topics. For example, a qualitative exploration of the microfoundations of audit trails shows how audit processes create conditions for the reproduction and expansion of audit accounts that become performative (Power, 2021). More recent research inspired by experiences of the pandemic has examined the microfoundations of innovation (Lago et al., 2023), supply chain resilience and sustainability (Silva et al., 2023), the analytics empowerment capability for humanitarian service systems (Akter et al., 2021), and international knowledge transfer (Rios-Ballesteros & Fuerst, 2022). Such studies show how organisational-level responses to the pandemic are, in part, explained by individual behaviours and team- or unit-level functioning.

The microfoundations' perspective offers a range of possibilities for novel theorising about organisational risk by offering a framework for connecting higher- and lower-level concepts while leaving open their specificities. Expanding theorising about the ways that lower-level concepts influence organisational-level conceptualisations of risk also contributes to the wider literature concerned with composition and compilation (Chan, 1998; Kozlowski & Klein, 2000). Composition occurs when phenomena aggregate in a linear manner such that lower- and higher-level entities are the same and is operationalised as mean scores of quantitative measures, an example being safety climate. Compilation occurs when the aggregation of variables is non-linear and is operationalised in terms of variance. The concept of variance has the potential to expand understanding of risk and organisation. To date, studies of variability have focused on errors, accidents, and designers of human-machine interfaces where it is considered alongside notions of adaptation and trade-offs that contribute to organisational reliability (Le Coze, 2019), as well as psychosocial safety climate that influences relationships between job demands and outcomes (Afsharian et al., 2019).

Further research that connects risk with the microfoundations approach enables reflections on how organisational outcomes are shaped by contextualised individual-level perceptions and actions. Doing so expands theorising about the relationships between risk and organisation by examining the constructs and processes that explain the organisation of risks and goes beyond a focus on the extent of risks organisations are exposed to or the degree of safety they can achieve. Such research would generate novel insights into why and when risks are identified, and harm is prevented.

METHODS

Key to the growth of scholarship has been a developing appreciation of the need to move away from relying only on approaches that model risk in terms of quantifiable antecedents and consequences,

and augmenting these with qualitative methods to embrace uncertainties, lived experiences and the ways that risk pervades organisational life (Pettersen Gould & Macrae, 2021). While quantitative measures calculate the known variables within risk equations, they can provide minimal insight on how people judge or respond to risk in the heat-of-the-moment and offer little explanation of the processes through which people and groups construct, interpret, engage with, and enact different forms of risk in their organisational lives. Qualitative, longitudinal, and ethnographic studies of the practical organisational work involved in identifying and analysing risk can, for instance, help reveal and explain the linkages between the psychological, cultural, and organisational processes that shape the handling of risk in complex organisations (Macrae, 2014). Moreover, by their very nature, calculative appraisals of risk will not incorporate risks that are entirely unknown and yet to be identified. Indeed, the construction and persistence of ignorance in relation to risk often underlies some of the most catastrophic and challenging threats to organisations and the communities they are embedded within (Turner & Pidgeon, 1997).

A forward-looking view of risk embraces uncertainty (Aven & Zio, 2021). The quantitative data typically used in traditional risk management practices are retrospective, whereas prospective and novel risks are less obvious, so qualitative data and its exploration become more important. Qualitative research permits a broader understanding of uncertainty that, in combination with quantitative research, can enable a naturalistic understanding of risk that is grounded in predictive models and data from historical events. Future studies that encompass qualitative, quantitative, and mixed methods will enable extended and novel theorising. For example, through using advances in artificial intelligence to analyse the plethora of new textual data sources (e.g., on workplace experiences, interaction transcripts, service-user observations) and guide qualitative analyses focussing on risk-related phenomena (Gillespie & Reader, 2022).

A broader approach to methods also corresponds with the continuing development of an interdisciplinary perspective on risk. Risk research is thriving, with studies approaching the topic from many angles, such as engineering, statistics, finance, economics, health care, geography, sociology, anthropology, and psychology. Continued theorising within domains creates a depth of knowledge that reveals the complexities of risks, opportunities and harm. The development of interdisciplinary insights enhances understanding and responsiveness as we have seen, for example, when theorising from psychology is applied to highly technical situations such as safety-critical organisations (Le Coze, 2019) or aviation (Noort et al., 2016). The progression of such unions contributes to a deeper integration of risk conceptualisations.

Despite the innovative benefits of interdisciplinary studies and their applications, the reality of achieving these outcomes is hampered by disciplinary divisions within universities and their systems to recognise and reward research. There are also feasibility and impact concerns from funding agencies (Soskice, 2016). We propose that the concept of risk has the potential to bring reconciliation to at least some of these debates and challenges because it has significant and sometimes devastating effects on organisations and societies. Although the pressing need to understand risks is not in question, understanding the mechanisms that connect researchers, practitioners, and policy makers are works in progress. Thus, we reiterate our call for further research that extends methods, theorising and connections between communities who share the common interest, and challenge, of risk.

CONCLUSION

With this article, we have considered how theories of organisational psychology can be extended, repurposed, and developed to promote enhanced visibility of risks as well as preparation for future crises. In doing so, we aim to inspire research that enables benefits of new thinking to be realised and risks to be organised collaboratively in ways that increase understanding of risk and reduce its potential for harm.

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Emma Soane: Writing – original draft. **Rhona Flin:** Writing – review and editing. **Carl Macrae:** Writing – review and editing. **Tom W. Reader:** Conceptualization; writing – review and editing.

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The authors declare no conflicts of interest.

DATA AVAILABILITY STATEMENT

Not applicable.

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REFERENCES

Afsharian, A., Dollard, M. F., Ziaian, T., Dormann, C., & Karimzadeh, A. (2019). Psychosocial safety climate and PSC ideal; direct and interaction effects. In M. F. Dollard, C. Dormann, & M. A. Idris (Eds.), *Psychosocial safety climate: A new work stress theory* (pp. 273–303). Springer Nature. https://doi.org/10.1007/978-3-030-20319-1_1

Akter, S., Motamarri, S., Sajib, S., Bandara, R. J., Tarba, S., & Vrontis, D. (2021). Theorising the microfoundations of analytics empowerment capability for humanitarian service systems. *Annals of Operations Research*, 1–25. https://doi.org/10.1007/s10479-021-04386-5

Anderson, N., Potočnik, K., & Zhou, J. (2014). Innovation and creativity in organizations: A state-of-the-science review, prospective commentary, and guiding framework. *Journal of Management*, *40*(5), 1297–1333. https://doi.org/10.1177/0149206314527128

Aven, T., & Zio, E. (2021). Globalization and global risk: How risk analysis needs to be enhanced to be effective in confronting current threats. *Reliability Engineering & System Safety*, *205*, 107270. https://doi.org/10.1016/j.ress.2020.107270

Bednarek, R., Chalkias, K., & Jarzabkowski, P. (2019). Managing risk as a duality of harm and benefit: A study of organizational risk objects in the global insurance industry. *British Journal of Management*, *32*(1), 235–254. https://doi.org/10.1111/1467-8551.12389

Bledow, R., Rosing, K., & Frese, M. (2013). A dynamic perspective on affect and creativity. *Academy of Management Journal*, *56*(2), 432–450. https://doi.org/10.5465/amj.2010.0894

Boyce, A. S., Nieminen, L. R., Gillespie, M. A., Ryan, A. M., & Denison, D. R. (2015). Which comes first, organizational culture or performance? A longitudinal study of causal priority with automobile dealerships. *Journal of Organizational Behavior*, *36*(3), 339–359. https://doi.org/10.1002/job.1985

Bryce, C., Ring, P., Ashby, S., & Wardman, J. K. (2020). Resilience in the face of uncertainty: Early lessons from the COVID-19 pandemic. *Journal of Risk Research*, *23*(7–8), 880–887. https://doi.org/10.1080/13669877.2020.1756379

Chan, D. (1998). Functional relations among constructs in the same content domain at different levels of analysis: A typology of composition models. *Journal of Applied Psychology*, *83*(2), 234–246. https://doi.org/10.1037/0021-9010.83.2.234

Coleman, J. (1990). *Foundations of social theory*. Harvard University Press.

Dong, Y., Bartol, K. M., Zhang, Z. X., & Li, C. (2017). Enhancing employee creativity via individual skill development and team knowledge sharing: Influences of dual-focused transformational leadership. *Journal of Organizational Behavior*, *38*(3), 439–458. https://doi.org/10.1002/job.2134

Felin, T., Foss, N. J., & Ployhart, R. E. (2015). The microfoundations movement in strategy and organization theory. *Academy of Management Annals*, *9*(1), 575–632. https://doi.org/10.5465/19416520.2015.1007651

Fenton-O'Creevy, M., Soane, E., Nicholson, N., & Willman, P. (2011). Thinking, feeling and deciding: The influence of emotions on the decision making and performance of traders. *Journal of Organizational Behavior*, *32*(8), 1044–1061. https://doi.org/10.1002/job.720

Foss, N. J., & Pedersen, T. (2019). Microfoundations in international management research: The case of knowledge sharing in multinational corporations. *Journal of International Business Studies*, *50*(9), 1594–1621. https://doi.org/10.1057/s41267-019-00270-4

Foss, N. J., & Pederson, T. (2016). Microfoundations in strategy. *Strategic Management Journal*, *37*(13), 22–34. https://doi.org/10.1002/smj.2362

Fürstenberg, N., Alfes, K., & Kearney, E. (2021). How and when paradoxical leadership benefits work engagement: The role of goal clarity and work autonomy. *Journal of Occupational and Organizational Psychology*, *93*(3), 672–705. https://doi.org/10.1111/joop.123

Gillespie, A., & Reader, T. W. (2022). Online patient feedback as a safety valve: An automated language analysis of unnoticed and unresolved safety incidents. *Risk Analysis*, *43*, 1463–1477. https://doi.org/10.1111/risa.14002

Giorgi, S., Lockwood, C., & Glynn, M. A. (2015). The many faces of culture: Making sense of 30 years of research on culture in organization studies. *Academy of Management Annals*, *9*(1), 1–54. https://doi.org/10.5465/19416520.2015.1007645

Giustiniano, L., e Cunha, M. P., Simpson, A. V., Rego, A., & Clegg, S. (2020). Resilient leadership as paradox work: Notes from COVID-19. *Management and Organization Review*, *16*(5), 971–975. https://doi.org/10.1017/mor.2020.57

Grigoriou, K., & Rothaermel, F. (2014). Structural microfoundations of innovation: The role of relational stars. *Journal of Management*, *40*(2), 586–615. https://doi.org/10.1177/0149206313513612

Guldenmund, F. W. (2000). The nature of safety culture: A review of theory and research. *Safety Science*, *34*(1–3), 215–257. https://doi.org/10.1016/S0925-7535(00)00014-X

Hardy, C., Maguire, S., Power, M., & Tsoukas, H. (2020). Organizing risk: Organization and management theory for the risk society. *Academy of Management Annals*, *14*(2), 1032–1066. https://doi.org/10.5465/annals.2018.0110

Hu, J., Erdogan, B., Jiang, K., Bauer, T. N., & Liu, S. (2018). Leader humility and team creativity: The role of team information sharing, psychological safety, and power distance. *Journal of Applied Psychology*, *103*(3), 313–323. https://doi.org/10.1037/apl0000277

Koh, D., Lee, K., & Joshi, K. (2019). Transformational leadership and creativity: A meta-analytic review and identification of an integrated model. *Journal of Organizational Behavior*, *40*(6), 625–650. https://doi.org/10.1002/job.2355

Kozlowski, S. W., Chao, G. T., Grand, J. A., Braun, M. T., & Kuljanin, G. (2013). Advancing multilevel research design: Capturing the dynamics of emergence. *Organizational Research Methods*, *16*(4), 581–615. https://doi.org/10.1177/1094428113493119

Kozlowski, S. W. J., & Klein, K. J. (2000). Multilevel approach to theory and research in organizations: Contextual, temporal, and emergent processes. In K. J. Klein & S. W. J. Kozlowski (Eds.), *Multilevel theory, research and methods in organizations: Foundations, extensions, and new directions* (pp. 3–90). Jossey-Bass.

Lago, N. C., Marcon, A., Ribeiro, J. L. D., Olteanu, Y., & Fichter, K. (2023). The role of cooperation and technological orientation on startups' innovativeness: An analysis based on the microfoundations of innovation. *Technological Forecasting and Social Change*, *192*, 122604. https://doi.org/10.1016/j.techfore.2023.122604

Le Coze, J. C. (2019). Vive la diversité! High reliability organisation (HRO) and resilience engineering (RE). *Safety Science*, *117*, 469–478. https://doi.org/10.1016/j.ssci.2016.04.006

Lee, H. W., Hays, N. A., & Johnson, R. E. (2021). To thine own (empowered) self be true: Aligning social hierarchy motivation and leader behavior. *Journal of Applied Psychology*, *106*(7), 1033–1048. https://doi.org/10.1037/apl0000813

Li, G., Lu, Y., & Eliason, R. G. (2022). How does ethical leadership enhance employee creativity during the COVID-19 pandemic in China? *Ethics & Behavior*, *32*(6), 532–548. https://doi.org/10.1080/10508422.2021.1932502

Linder, S., & Foss, N. J. (2018). Microfoundations of organizational goals: A review and new directions for future research. *International Journal of Management Reviews*, *20*(S1), S39–S62. https://doi.org/10.1111/ijmr.12154

Little, D. (1991). *Varieties of social explanation: An introduction to the philosophy of social science*. Westview Press.

Loewenstein, G. F., Weber, E. U., Hsee, C. K., & Welch, N. (2001). Risk as feelings. *Psychological Bulletin*, *127*(2), 267–286. https://doi.org/10.1037/0033-2909.127.2.267

Lupton, D. (2013). Risk and emotion: Towards an alternative theoretical perspective. *Health, Risk & Society*, *15*(8), 634–647. https://doi.org/10.1080/13698575.2013.848847

Macrae, C. (2010). Regulating resilience? Regulatory work in high-risk arenas. In B. Hutter (Ed.), *Anticipating risks and organising risk regulation* (pp. 139–160). Cambridge University Press.

Macrae, C. (2014). *Close calls: Managing risk and resilience in airline flight safety*. Palgrave Macmillan.

Macrae, C. (2022). Learning from the failure of autonomous and intelligent systems: Accidents, safety, and sociotechnical sources of risk. *Risk Analysis*, *42*(9), 1999–2025. https://doi.org/10.1111/risa.13850

Newman, A., Donohue, R., & Eva, N. (2017). Psychological safety: A systematic review of the literature. *Human Resource Management Review*, *27*(3), 521–535. https://doi.org/10.1016/j.hrmr.2017.01.001

Noort, M. C., Reader, T. W., & Gillespie, A. (2019). Speaking up to prevent harm: A systematic review of the safety voice literature. *Safety Science*, *117*, 375–387. https://doi.org/10.1016/j.ssci.2019.04.039

Noort, M. C., Reader, T. W., Shorrock, S., & Kirwan, B. (2016). The relationship between national culture and safety culture: Implications for international safety culture assessments. *Journal of Occupational and Organizational Psychology*, *89*(3), 515–538. https://doi.org/10.1111/joop.12139

Pan, J., Guan, Y., Wu, J., Han, L., Zhu, F., Fu, X., & Yu, J. (2018). The interplay of proactive personality and internship quality in Chinese university graduates' job search success: The role of career adaptability. *Journal of Vocational Behavior*, *109*, 14–26. https://doi.org/10.1016/j.jvb.2018.09.003

Pan, W., & Sun, L.-Y. (2018). A self-regulation model of Zhong Yong thinking and employee adaptive performance. *Management and Organization Review*, *14*(1), 135–159. https://doi.org/10.1017/mor.2017.33

Pérez-Nebra, A., Sklaveniti, C., Islam, G., Petrović, I., Pickett, J., Alija, M., Bal, M., Tekeste, M., Bazana, S., & Sanderson, Z. (2021). COVID-19 and the future of work and organisational psychology. *SA Journal of Industrial Psychology*, *47*(1), 1–9. https://doi.org/10.4102/sajip.v47i0.1854

Perry-Smith, J. E., & Mannucci, P. V. (2017). From creativity to innovation: The social network drivers of the four phases of the idea journey. *Academy of Management Review*, *42*(1), 53–79. https://doi.org/10.5465/amr.2014.0462

Pettersen Gould, K. A., & Macrae, C. (2021). Hazardous technological systems from the inside out: An introduction. In K. A. Pettersen Gould & C. Macrae (Eds.), *Inside hazardous technological systems: Methodological foundations, challenges and future directions* (pp. 1–18). CRC Press.

Pillay, N., Park, G., Kim, Y. K., & Lee, S. (2020). Thanks for your ideas: Gratitude and team creativity. *Organizational Behavior and Human Decision Processes*, *156*, 69–81. https://doi.org/10.1016/j.obhdp.2019.11.005

Power, M. (2021). Modelling the micro-foundations of the audit society: Organizations and the logic of the audit trail. *Academy of Management Review*, *46*(1), 6–32. https://doi.org/10.5465/amr.2017.0212

Rios-Ballesteros, N., & Fuerst, S. (2022). Exploring the enablers and microfoundations of international knowledge transfer. *Journal of Knowledge Management*, *26*(7), 1868–1898. https://doi.org/10.1108/JKM-04-2021-0344

Roberts, K. H. (1990). Some characteristics of one type of high reliability organization. *Organization Science*, *1*(2), 160–176. https://doi.org/10.1287/orsc.1.2.160

Rudolph, C. W., Allan, B., Clark, M., Hertel, G., Hirschi, A., Kunze, F., Shockley, K., Shoss, M., Sonnentag, S., & Zacher, H. (2021). Pandemics: Implications for research and practice in industrial and organizational psychology. *Industrial and Organizational Psychology*, *14*(1–2), 1–35. https://doi.org/10.1017/iop.2020.48

Schein, E. H. (1983). The role of the founder in creating organizational culture. *Organizational Dynamics*, *12*(1), 13–28. https://doi.org/10.1016/0090-2616(83)90023-2

Schulman, P. R. (1993). The negotiated order of organizational reliability. *Administration and Society*, *25*(3), 353–372. https://doi.org/10.1177/009539979302500305

Shen, W., Hentschel, T., & Hideg, I. (Forthcoming). Leading through the uncertainty of COVID-19: The joint influence of leader emotions and gender on abusive and family-supportive supervisory behaviours.

Silva, M. E., Pereira, M. M., & Hendry, L. C. (2023). Embracing change in tandem: Resilience and sustainability together transforming supply chains. *International Journal of Operations & Production Management*, *43*(1), 166–196. https://doi.org/10.1108/IJOPM-09-2022-0625

Siswanti, Y., & Muafi, M. (2020). Empowering leadership and individual creativity: The mediation role of psychological empowerment in facing COVID-19 pandemic. *Journal of Asian Finance, Economics and Business*, *7*(11), 809–816. https://doi.org/10.13106/jafeb.2020.vol7.no11.809

Sjöberg, L. (2007). Emotions and risk perception. *Risk Management*, *9*(4), 223–237. https://doi.org/10.1057/palgrave.rm.8250038

Slovic, P., Finucane, M. L., Peters, E., & MacGregor, D. G. (2004). Risk as analysis and risk as feelings: Some thoughts about affect, reason, risk, and rationality. *Risk Analysis*, *24*(2), 311–322. https://doi.org/10.1111/j.0272-4332.2004.00433.x

Soskice, D. (2016). *Crossing paths: Interdisciplinary institutions, careers, education and applications.* British Academy Report. https://www.thebritishacademy.ac.uk/publications/crossing-paths/

Turner, B., & Pidgeon, N. (1997). *Man-made disasters* (2nd ed.). Butterworth-Heinemann.

Wang, J., Zhang, Z., & Ming, J. (Forthcoming). Redemption from SRHRM under COVID-19: How business threat due to COVID-19 affects employee insomnia via hope and workplace anxiety. *Journal of Occupational and Organizational Psychology*.

Weick, K. E. (1987). Organizational culture as a source of high reliability. *California Management Review*, *29*(2), 112–127. https://doi.org/10.2307/41165243

World Health Organisation. (2022). *WHO Coronavirus (COVID-19) Dashboard*. https://covid19.who.int/

Zhang, S., Ke, X., Frank Wang, X. H., & Liu, J. (2018). Empowering leadership and employee creativity: A dual-mechanism perspective. *Journal of Occupational and Organizational Psychology*, *91*(4), 896–917. https://doi.org/10.1111/joop.12219

Zhang, W., Liao, S., Liao, J., & Zheng, Q. (2021). Paradoxical leadership and employee task performance: A sense-making perspective. *Frontiers in Psychology*, *12*, 753116. https://doi.org/10.3389/fpsyg.2021.753116

Zhang, Y., & Han, Y. L. (2019). Paradoxical leader behavior in long-term corporate development: Antecedents and consequences. *Organizational Behavior and Human Decision Processes*, *58*(2), 42–54. https://doi.org/10.5465/amj.2012.0995

Zhang, Y., Waldman, D. A., Han, Y.-L., & Li, X.-B. (2015). Paradoxical leader behaviors in people management: Antecedents and consequences. *Academy of Management Journal*, *58*(2), 538–566. https://doi.org/10.5465/amj.2012.0995

Zinn, J. O. (2016). Living in the Anthropocene: Towards a risk-taking society. *Environmental Sociology*, *2*(4), 385–394. https://doi.org/10.1080/23251042.2016.1233605

Zinn, J. O. (2020). *Understanding risk-taking.* Palgrave Macmillan.