Extreme context exposure and counterproductive work behaviour: the role of exhaustion, authentic leadership, and spirituality

Received: 21 April 2025 | Accepted: 29 October 2025

DOI: 10.1111/apps.70044

ORIGINAL ARTICLE

APPLIED PSYCHOLOGY IAAP

Extreme context exposure and counterproductive work behaviour: The role of exhaustion, authentic leadership and spirituality

Hamid Roodbari[1] | **Yuyan Zheng**[1] | **Sanaz Vatankhah**[2] | **Stephen Woods**[1] | **Benjamin Laker**[3]

[1]The Management Discipline, Surrey Business School, University of Surrey, Surrey, UK

[2]Graduated School of Business, University of Bedfordshire, Luton, UK

[3]Henley Business School, University of Reading, Henley-on-Thames, UK

Correspondence
Hamid Roodbari, Department of People and Organisations, Surrey Business School, University of Surrey, Guildford, Surrey, GU2 7XH, UK.
Email: h.roodbari@surrey.ac.uk

Abstract

In recent years, research on extreme contexts has expanded significantly, focussing on management practices in unusual or atypical work environments. However, individual behavioural responses in these settings have received less attention. Our study addresses this gap by using Job-Demand Resources (JD-R) theory to explore how extreme context exposure (i.e. frequent exposure to extreme events) influences counterproductive work behaviour towards the organisation (CWB-O) in high-risk contexts of aviation and shipping. In Study 1, based on data from 297 flight cadre, we found that extreme context exposure is positively linked to CWB-O, with exhaustion linking the two variables. Study 2 replicated these findings with data from 309 seafarers, reinforcing the robustness of our results. Additionally, we identified authentic leadership and spirituality as key job and personal resources that moderate this relationship, reducing the impact of extreme context exposure on CWB-O. We conclude by discussing the theoretical and practical implications of

our findings, emphasising the importance of addressing individual behaviours in extreme work environments.

KEYWORDS

authentic leadership, counterproductive work behaviour, exhaustion, extreme contexts, spirituality

INTRODUCTION

Context research plays a crucial role in shaping management practices and understanding workplace dynamics. This field of study focusses on the 'situational opportunities and constraints that affect the occurrence and meaning of organisational behaviour as well as functional relationships between variables' (Johns, 2006, p. 386). It operates on the premise that organisational outcomes do not occur in a vacuum but are influenced by contextual elements that define workplace behaviours (Johns, 2006; Whetten, 2009). In this regard, some work environments are said to be relatively stable and predictable, while others are seen as extreme contexts characterised by high levels of uncertainty, volatility and adversity (Hannah et al., 2009). For example, seafarers in the shipping industry regularly encounter extreme weather, high-risk zones and equipment failures, pushing human resilience to the edge. Research into extreme contexts is relatively rare but remains an area of intrigue for many management scholars (Hällgren et al., 2018). As a result, recent years have witnessed increasing interest in understanding how people behave in extreme work contexts.

Studying extreme work contexts has significant academic and practical implications, enabling organisations to better prepare for and respond to extreme events (Hällgren et al., 2018). Extreme work contexts refer to situations in which 'one or more extreme events are occurring or are likely to occur that may exceed the organisation's capacity to prevent and result in an extensive and intolerable magnitude of physical, psychological, or material consequences to organisation members' (Hannah et al., 2009, p.898). While research on extreme work contexts has grown, it has largely focussed on how organisations avoid or manage extreme events (Hällgren et al., 2018; Williams et al., 2017). However, there is still a gap in understanding how employees experience and respond to extreme events. Extreme contexts, characterised by intense physical, cognitive and emotional pressure, often heighten strain and negative emotional reactions among employees (Ford & Tetrick, 2011; Jermier et al., 1989). Studying these environments is crucial for understanding employee reactions that may be overlooked in typical settings (Madsen, 2009; Madsen & Desai, 2010). A greater understanding of individual experience of and responses to extreme events could provide insights to more effective management of such events in organisations (Hannah et al., 2009).

The present article addresses the issue of potential negative behavioural consequences of exposure to extreme contexts among employees (Brammer et al., 2023; Sumanth et al., 2024). Building on the Job Demands–Resources theory (JD-R: Bakker & Demerouti, 2017; Demerouti et al., 2001), we investigate the micro-foundational processes of how extreme context exposure (i.e. frequent exposure to extreme events) influences Counterproductive Work Behaviour towards the Organisation (CWB-O). CWB-O refers to volitional acts that harm organisations (e.g. taking property without permission) (Spector et al., 2006). CWB-O (e.g. theft and fraud) is widespread in workplaces and results in significant financial losses for organisations (Carpenter

et al., 2021). For example, the Association of Certified Fraud Examiners recently estimated that global businesses lose $3.1 trillion annually as a result of fraudulent activities (2024). It is therefore imperative to understand the factors that drive such behaviours for developing effective prevention strategies, especially for organisations operating in extreme contexts where sustainability is a key concern (Brammer et al., 2023). We argue that high extreme context exposure increases employees' exhaustion (i.e. the feeling of being emotionally overextended and exhausted by one's work; Wright & Cropanzano, 1998, p. 486), which enhances CWB-O. In essence, drawing on JD-R theory, we argue that extreme context exposure acting as a job demand requires ongoing effort and imposes physiological and psychological strain, leading to exhaustion. To protect their remaining limited resources, exhausted employees resort to CWB-O.

As a part of our micro-foundational framework, we examine the roles of authentic leadership and spirituality as moderators for the indirect link between extreme context exposure and CWB-O. Authentic leadership serving as a job resource is characterised by leader self-awareness (i.e. understanding one's impact on others), relational transparency (building trust by openly sharing information and feelings), internalised moral perspective (acting according to their moral values) and balanced processing (objectively analysing relevant data before making decisions; Walumbwa et al., 2008). Authentic leaders foster a supportive environment by sharing important decision-making information; valuing the input of others; and openly communicating their values, motives and emotions (Wang et al., 2014).

We further examine spirituality as a personal resource, which encompasses beliefs, practices and experiences related to the sacred, which play a vital role in building resilience and enhancing an individual's ability to effectively manage and influence their environment (Bickerton et al., 2014). This connection to the sacred provides a sense of purpose and stability, particularly in challenging circumstances, allowing individuals to draw on inner strength and remain grounded in the face of adversity. We focus on spirituality as a crucial element in empowering individuals to navigate and thrive in high-risk, extreme contexts (Ganzin et al., 2020).

According to JD-R theory, both job resources such as authentic leadership and personal resources like spirituality are crucial for enhancing employees' mastery and motivation (Bakker & Demerouti, 2017). These resources equip individuals with the tools they need to handle the pressures and demands of their work environment more effectively. Specifically, they help mitigate the effects of strain, such as exhaustion, by providing both external and internal support systems that encourage resilience and sustained motivation (Bakker & Demerouti, 2017). As a result, we argue that the indirect relationship between extreme context exposure and CWB-O is less pronounced among employees with authentic leaders and spirituality (see Figure 1 for our theoretical model).

Our study makes several key contributions to the emerging literature on extreme contexts. By drawing on the JD-R theory, we address Hällgren et al.'s (2018) call for a deeper understanding of how extreme context exposure influences workplace behaviours. We extend previous research by investigating the micro-foundational process demonstrating individuals' reactions in extreme contexts, offering insights that could inform interventions to improve employee well-being and behaviour. In addition, we respond to calls for research on the antecedents of CWB-O (Bollmann & Krings, 2016; Marcus et al., 2016). The study examines extreme context exposure as a situational antecedent and employee exhaustion as a personal antecedent of CWB-O. Further, it explores the moderating roles of authentic leadership and spirituality in the relationship between extreme context exposure and CWB-O.

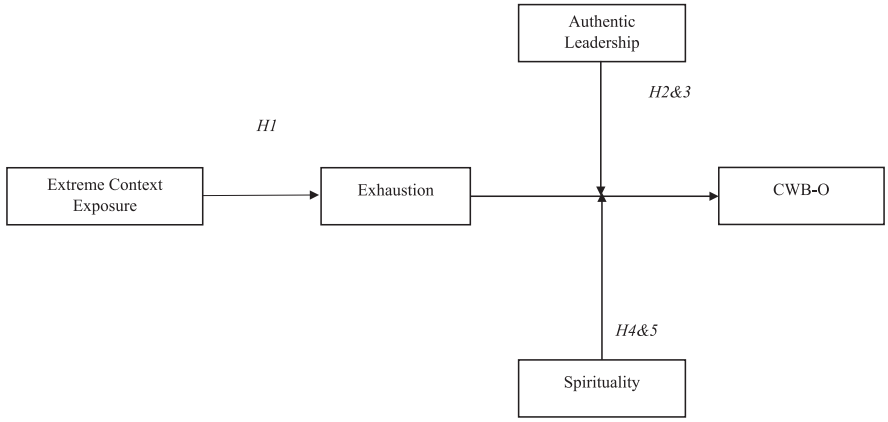

FIGURE 1 Conceptual model and hypotheses.

Finally, this study extends the application of the JD-R theory to extreme and understudied field contexts, namely, shipping and aviation, addressing gaps in prior empirical validation. Although various theoretical perspectives have been used in extreme context research (Hällgren et al., 2018, 2025; Hannah et al., 2009), these reviews highlight very limited use of the JD-R theory in such settings. First, we conceptualise extreme context exposure as a distinct and underexplored job demand, extending prior work that has treated it only as a contextual factor (e.g. Eberly et al., 2017). Consistent with Hällgren et al. (2025), we adopt the 'extreme as event' perspective, treating extreme events as identifiable occurrences with clear physical and emotional demands. Second, while meta-analytic evidence shows that physically hazardous and emotionally demanding jobs predict burnout (Nahrgang et al., 2011), and that burnout-related exhaustion predicts CWB (Balducci et al., 2011), our study advances this line of inquiry by investigating the association between extreme context exposure and CWB-O, and whether exhaustion accounts for this association. This allows us to demonstrate the health-impairment process of the JD-R theory beyond burnout, thereby extending its applicability to deviant work outcomes. Third, we provide empirical support for the JD-R's buffering hypothesis (Balducci et al., 2011), by showing that authentic leadership and spirituality, as key job and personal resources, buffer the impact of exhaustion on CWB-O and, by extension, the linkage between extreme context exposure and CWB-O. This contributes to validating the JD-R theory applicability in extreme contexts. Further, our inclusion of spirituality addresses a conceptual gap in the JD-R literature, as few studies have examined faith-based personal resources in organisational settings (Obregon et al., 2022). By demonstrating spirituality's role in helping employees manage strain in extreme work environments, our study broadens understanding of personal resources within the JD-R framework.

Given the substantial financial and reputational risks associated with CWB-O, particularly in high-risk sectors such as aviation and shipping (Searle & Rice, 2025), identifying its antecedents is a pressing concern. Our findings offer practical guidance by highlighting exhaustion as a key mechanism through which extreme context exposure triggers deviant organisational behaviour. Organisations should proactively monitor the frequency and intensity of employees' exposure to extreme events, using this information to inform timely interventions, such as job redesign, targeted training and psychological support. Crucially, our results point to the importance of strengthening resource buffers: developing authentic leadership at supervisory levels

and fostering spiritual resilience among employees. These context-sensitive strategies are especially critical in sectors where exposure to persistent strain is unavoidable and organisational sustainability hinges on human performance under pressure (Brammer et al., 2023).

LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

Extreme context exposure

Extreme contexts are environments where one or more extreme events are occurring or are likely to occur. An extreme event is 'a discrete episode or occurrence that may result in an extensive and intolerable magnitude of physical, psychological, or material consequences to—or in close physical or psycho-social proximity to—organisation members' (Hannah et al., 2009, p.898). Hällgren et al. (2018), based on the extreme events occurrence, categorise extreme contexts into three types: risky contexts (characterised by near-constant exposure to potential extreme events related to the organisation's routine activities, e.g. shipping), emergency contexts (characterised by actual extreme events related to the organisation's routine activities, e.g. hospital emergencies and rescues) and disrupted contexts (characterised by actual extreme events unrelated to the organisation's routine activities, e.g. a natural disaster). In this study, we focussed on risky contexts, specifically aviation and shipping, because these environments involve frequent and sustained exposure to potential extreme events (Hawkins, 2015; Landman et al., 2017). This makes them particularly suitable for reliably operationalising 'extreme context exposure' as a chronic job demand (Hällgren et al., 2025). Unlike emergency or disrupted contexts, where extreme events are often rare or unpredictable, risky contexts present recurring extreme events that can be consistently measured over time. Methodologically, this allows for more robust analysis of cumulative effects on employee well-being and behaviour. Recent developments in extreme context research also highlight the importance of risky contexts. As noted by Hällgren et al. (2025), these settings are especially valuable for examining how temporality, emotion and embodiment shape human responses under prolonged strain. However, while prior studies in risky contexts have largely centred on system reliability and operational routines, there has been limited focus on individual behavioural outcomes (Hällgren et al., 2018). Our study addresses this gap by examining how employees experience and respond to chronic exposure in high-risk settings.

According to Hannah et al. (2009), two elements of time and complexity serve to intensify extreme context exposure. Complexity refers to highly dynamic environments in which interconnected events interact to produce unexpected outcomes (Marion & Uhl-Bien, 2001). Time has three forms: (1) time compression, where an impending extreme event requires rapid reaction, thereby limiting response and decision time; (2) duration, referring to the length of time an extreme event lasts, which shapes the ability to respond, adapt, and maintain both psychological and material resources; and (3) frequency, denoting how often extreme events occur, influencing preparedness, desensitisation, and the organisation's ability to recover between events. In risky contexts, the frequency of extreme events influences decision-making and response patterns, making frequency a key factor in driving behaviours; conversely, in emergency and disrupted contexts, the unpredictability or rarity of extreme events reduces the impact of frequency on behaviours (Hällgren et al., 2018; Leuridan & Demil, 2022). Given these, in this article, we investigate the impact of frequency of exposure to extreme events in risky contexts of shipping and aviation.

Extreme context exposure and CWB-O: The role of exhaustion

In this article, we propose that extreme context exposure is associated with CWB-O via exhaustion. We firstly argue that extreme context exposure predicts exhaustion. Exhaustion, as a key element of burnout, reflects a state in which employees feel emotionally drained and are unable to contribute emotionally to their job (Maslach et al., 2001). According to JD-R's primary proposition, job characteristics can be categorised as either job demands or job resources (Bakker et al., 2023). Job demands refer to the 'physical, psychological, social, or organisational aspects of the job that require sustained physical, cognitive, and/or emotional effort and are therefore associated with certain physiological and/or psychological costs' (Bakker et al., 2023, p.33). In contrast, job resources are those 'aspects of the job that have motivating potential, that are functional in achieving work goals, that regulate the impact of job demands, and that stimulate learning and personal growth' (Bakker et al., 2023, p.33).

Frequent exposure to extreme events qualifies as a job demand because it requires sustained physical, cognitive, and emotional effort to manage ongoing risk and uncertainty (Hällgren et al., 2018). While extreme events are defined as discrete, high-impact occurrences with severe physical, psychological or material consequences (Hällgren et al., 2018), repeated exposure, especially in high-risk sectors, creates a persistent strain. According to Bakker et al. (2023), job demands are aspects of work that impose sustained effort and lead to psychological or physiological costs. Therefore, when extreme events occur frequently, the cumulative demand on employees' resources mirrors chronic job demands.

According to JD-R's health impairment process, frequent job demands increase the effort required from employees, which depletes their physical, cognitive and emotional resources, eventually leading to exhaustion (Bakker et al., 2023). Empirical evidence supports the health impairment process of extreme context exposure. For example, Alarcon (2011) demonstrated through meta-analysis that exposure to situations that need high workload (e.g. adverse events) leads to exhaustion. Similarly, Nahrgang et al. (2011) found that exposure to risks and hazards, in terms of the number of hazards, and physical demands predict exhaustion. Another meta-analysis by Crawford et al. (2010) reported that the frequency of exposure to situations with time urgency is associated with burnout, including the exhaustion component.

In the context of our theorising, we propose that the effects of extreme context exposure accumulate through frequent experiences of extreme events. This proposition is supported by studies that examine the JD-R over time. Longitudinal studies examining the effects of job demands on burnout show the future effects of demands on burnout, and moreover, these studies often show associations of measures of job demands overtime, suggesting that roles may be characterised by persistent high demands (Lesener et al., 2019). Overtime, exposure to persistently high or extreme job demands may heighten the generalised risk of burnout and exhaustion. This was evident in analyses of the development of burnout over an 8-year period reported by Mäkikangas et al. (2021). In this study, persistent experience of high job demands marked out those employees whose level of burnout remained high and increasing through the period under examination. We propose that extreme context exposure over the course of employees' careers in risky contexts such as shipping and aviation, is associated with a higher propensity to experience exhaustion at work.

In short, we argue that frequent exposure to extreme events is a robust predictor of individual exhaustion. In shipping, employees face rare high-intensity events such as collisions or explosions, as well as more frequent, lower-intensity events like crew injuries, toxic gas exposure, chemical hazards and extreme weather. In aviation, while catastrophic events like loss of

flight control are rare, flight crews more routinely encounter extreme weather conditions and aggressive passengers. First, such exposure demands sustained cognitive and physical effort, not only to respond to immediate crises but also to remain constantly vigilant and prepared for future threats. Second, working under these conditions heightens employees' perceived risk and imposes significant psychological costs (Nahrgang et al., 2011). This continuous requirement to mobilise physical, emotional and mental resources limits opportunities for recovery, ultimately depleting individuals' energy reserves and leading to exhaustion. This aligns with the health impairment process of the JD-R theory and suggests that more exposure to unpredictable job demands undermines well-being over time (Sinclair & Britt, 2013).

Second, we argue that exhaustion predicts CWB-O. Counterproductive Work Behaviour (CWB) refers to intentional actions that harm organisations or their members (Spector et al., 2006). CWB can be directed at the organisation (CWB-O) or at individuals (CWB-I). In this study, we focussed specifically on CWB-O, given the nature of the work environments, shipping and aviation, which are defined by rigid hierarchies, strict operational procedures and formal behavioural norms. In such highly regulated, safety-critical industries, open interpersonal conflict (CWB-I) is less tolerated, more closely monitored and more likely to be sanctioned, making CWB-I less observable and less likely to occur (Gruys & Sackett, 2003; Spector et al., 2006). In contrast, CWB-O, such as intentionally reducing effort, may occur in more covert or passive forms that are harder to detect and more feasible for employees experiencing strain (Marcus & Schuler, 2004). These behaviours often serve as indirect expressions of frustration or resistance, particularly in hierarchical settings where direct confrontation (CWB-I) is risky or culturally discouraged (Robinson & Greenberg, 1998).

According to JD-R, strain such as exhaustion can lead to dysfunctional behaviours (Bakker et al., 2023). The core rationale for this proposition is that when employees feel exhausted, they are less willing and able to invest effort in their tasks and instead prioritise conserving their remaining energy (Demerouti et al., 2014). This shift from engagement to self-protection impairs concentration, reduces task performance and increases the likelihood of mistakes (Linden et al., 2005). Importantly, as employees struggle to cope with prolonged demands, negative affect intensifies, often manifesting as irritability or anger, which further undermines rational decision-making and behavioural control (Fredrickson, 2001). In this context, employees may resort to deviant behaviours as a way to regulate their strain (Bakker & Costa, 2014), including CWB-O (Spector et al., 2006).

Although exhaustion is typically characterised by diminished energy, enthusiasm and motivation (Maslach et al., 2001), it does not necessarily lead to complete passivity or withdrawal. Instead, employees experiencing emotional depletion may engage in CWB-O as a maladaptive coping strategy. Individuals facing persistent psychological strain may attempt to protect their remaining resources or retaliate against the organisation they perceive as responsible for their exhaustion (Demerouti, 2025). Such behaviours, including intentionally slowing down work, neglecting responsibilities or withholding effort, are not motivated by goal-directed striving, but rather reflect defensive, resource-conserving responses to chronic stress (Fox et al., 2001). CWB-O can therefore be understood as a behavioural manifestation of frustration, disillusionment or psychological withdrawal, particularly when employees feel unable to cope constructively.

Furthermore, exhaustion impairs self-regulation and amplifies negative affect, reducing impulse control and increasing the likelihood of deviant behaviour (Balducci et al., 2011; Demerouti et al., 2014; Fox et al., 2001). This aligns with prior work showing that CWB-O often emerges in response to stressful working conditions and serves as an attempt to restore a sense

of balance between the demands placed on employees and their depleted psychological resources (Schaufeli, 2006; Spector & Fox, 2010). A growing body of empirical evidence supports this connection, consistently demonstrating that exhaustion is positively associated with CWB (Balducci et al., 2011; Cohen & Diamant, 2019; Demerouti et al., 2015), reinforcing the notion that exhausted employees are more likely to engage in CWB-O.

To summarise, we position extreme context exposure in the JD-R model as a job demand. Based on the health impairment process, frequent job demands increase the effort required from employees, which depletes their resources, eventually leading to exhaustion. Seeking to protect limited resources, employees engage in CWB-O. Therefore, we hypothesise:

> **Hypothesis 1.** Exhaustion mediates the relationship between extreme context exposure and CWB-O.

The moderating role of authentic leadership

According to the JD-R's buffer hypothesis, job resources can mitigate the negative effects of job demands at different stages of the health impairment process, either by influencing how demands are appraised or by moderating behavioural responses to strain (Bakker et al., 2023). In this study, we focus on the final stage, examining how authentic leadership (a job resource) moderates the link between exhaustion and CWB-O. This decision is grounded in both theory and context. Theoretically, prior studies have supported second-stage moderated mediation models, showing that resources can buffer the effects of exhaustion on negative workplace behaviours (e.g. Nauman et al., 2023; Steffensen et al., 2021). Specifically, Balducci et al. (2011) found that job resources can weaken the impact of negative affect on CWB. Contextually, in extreme, hierarchical environments such as shipping and aviation, employees have limited control over their exposure to extreme events, making it more plausible that resource effects emerge after exhaustion has occurred, influencing whether or not it translates into CWB-O. In such environments, employees may not be able to avoid strain, but they can still draw on resources to regulate their response. Leadership in these settings plays a critical role, especially under threat, by offering guidance and psychological support (Hannah et al., 2009), making its influence most visible at the behavioural response stage.

We focus on authentic leadership in extreme contexts because in such settings, stressed employees often look to leaders for cues on how to behave, seek support and derive meaning from their work (Bartone, 2006). Authentic leaders build trust and psychological safety, enabling followers to respond better to stress, stay focussed and sustain effort under pressure (Sweeney et al., 2009). Firstly, followers who trust their leaders during prolonged stress are more likely to stay focussed and sustain effort (Sweeney et al., 2009). Secondly, followers respond more positively to stress when leaders create an environment of honest interactions and encourage healthy conflict (Zaccaro et al., 2001). Thirdly, effective leaders seek input, integrate feedback and communicate their decisions clearly (Day et al., 2014). These qualities are often linked to authentic leadership, which can positively influence follower behaviours in extreme contexts.

Authentic leadership as a higher-order construct comprises four dimensions: self-awareness, relational transparency, internalised moral perspective and balanced processing (Walumbwa et al., 2008). *Self-awareness* refers to the leader's understanding of their impact on others. *Relational transparency* involves building trust by openly sharing information and

expressing genuine thoughts and feelings. *Internalised moral perspective* means acting based on personal moral standards rather than external pressures. *Balanced processing* involves objectively evaluating all relevant information and seeking diverse perspectives before making decisions. Authentic leaders by providing emotional social support help employees enhance positive emotions (Gardner et al., 2005) and reduce negative emotions (Fredrickson, 2001).

First, authentic leaders, with their heightened *self-awareness*, are attuned to how their actions impact followers and adjust their behaviours to meet followers' emotional and motivational needs. This empathetic approach can foster positive connections and mitigate negative emotional reactions (Gardner et al., 2009). Second, authentic leaders, through *relational transparency*, foster open, honest dialogue without hidden agendas. This openness creates a trusting environment where followers feel safer to express themselves in terms of sharing concerns, admitting mistakes and expressing emotions without fear of punishment, all linked with more positive emotions (Ryan & Deci, 2001). Third, through *balanced decision-making*, authentic leaders invite followers to challenge decisions and provide input, fostering trust and a sense of value, which promotes positive emotions (Ilies et al., 2005). Finally, through *internalised moral perspective*, authentic leaders encourage followers to act according to their values, enhancing decision-making and promoting positive emotions (Avolio et al., 2004).

Research provides empirical evidence that positive emotions are associated with lower CWB-O (Fox et al., 2001). Thus, by enhancing positive emotions, authentic leaders lower the likelihood of exhausted employees engaging in CWB-O. Conversely, heightened negative emotions can activate moral disengagement, temporarily obscuring personal moral standards and allowing CWB-O as a coping mechanism for exhaustion (Fida et al., 2015). Prior studies also confirm the association of negative emotions and CWB-O (Fida et al., 2015; Ng & Yang, 2023). Thus, by reducing negative emotions, authentic leaders lower the likelihood of exhausted employees engaging in CWB-O. Therefore, we hypothesise:

> **Hypothesis 2.** Authentic leadership moderates the relationship between exhaustion and CWB-O, such that this relationship is weaker when authentic leadership is higher (vs. lower).

Building on the first two hypotheses, we propose that the indirect relationship between extreme context exposure and CWB-O, mediated by exhaustion, is weaker for employees with authentic leaders. This reflects a second-stage moderated mediation model, suggesting that the impact of extreme context exposure on CWB-O depends on the authenticity of leadership. According to the continuum model of impression formation, people tend to pay more attention to and evaluate the behaviours of those in authority when they perceive a threat—a phenomenon known as outcome dependency (Dépret & Fiske, 1999). Additionally, research shows that individuals under stress heighten their focus on significant environmental factors, such as their leader (Eberly et al., 2017). We argue that employees exposed to extreme contexts actively seek support from authentic leaders as they reach the limits of their resources. Authentic leaders, by providing emotional social support, help enhance positive emotions and reduce negative ones, making employees less likely to engage in CWB-O. In contrast, employees with less authentic leaders, feeling a lack of support and limited resources, are more likely to engage in CWB-O when exposed to extreme context. Taken together, we propose the following hypothesis:

Hypothesis 3. Authentic leadership moderates the indirect link between extreme context exposure and CWB-O via exhaustion, such that the indirect effect of exhaustion is weaker when authentic leadership is higher (vs. lower).

The moderating role of spirituality

According to JD-R, personal resources function similarly to job resources by mitigating the negative effects of job demands in the health impairment process (Bakker et al., 2023). Personal resources are positive self-evaluations associated with resilience, pertain to individuals' perceptions of their capacity to successfully influence and control their environment (Bakker et al., 2023). In this study, we propose that spirituality, as a personal resource, serves as a moderator in the relationship between exhaustion and CWB-O. Spirituality encompasses beliefs, practices and experiences related to the sacred, which play a crucial role in fostering resilience and enhancing an individual's capacity to manage challenges and maintain control in difficult situations (Bickerton et al., 2014). We argue that spirituality is a critical personal resource in extreme contexts and is therefore especially pertinent to consider as a potential moderator of the consequences of extreme context exposure. As Ganzin et al. (2020) pointed out, spirituality often emerges in such contexts as a response to perceived loss of control, helping individuals cope with uncertainty and stress. Furthermore, research by Partouche-Sebban et al. (2021) highlights spirituality as an essential coping strategy during stressful events, such as the COVID-19 pandemic.

Spirituality may moderate the links between exhaustion and CWB-O in different ways. First, spirituality serves as an active coping mechanism that enhances resilience (Bickerton et al., 2014). This increased resilience enables employees to better adapt to adversity and thrive in challenging environments (Hu et al., 2015). Conversely, lower levels of spirituality are associated with reduced resilience, making individuals more vulnerable to the negative effects of stressful environments, and therefore more likely to engage in deviant behaviours (Jiang et al., 2020). In this way, spirituality acts as a protective buffer, helping employees maintain constructive behaviour even when exhausted. Second, exhausted employees who view their life experiences, including work, as sacred and meaningful are more likely to take psychological ownership of their roles. This sense of ownership fosters a deeper commitment to their work, making them less likely to engage in deviant behaviours (Haldorai et al., 2020). Third, spirituality offers a solid frame of reference for decision-making, guiding individuals towards ethical and responsible behaviours. Exhausted employees who are spiritually grounded are more likely to align their actions with their moral values, making them less prone to engaging in deviant behaviours (Fernando & Jackson, 2006). Lastly, spirituality provides a sense of comfort and a secure foundation, allowing employees to approach their work with a mastery orientation (Elliot & Reis, 2003). This spiritual grounding gives employees the psychological stability needed to confidently engage in their tasks, focus on growth and strive for excellence, even in challenging conditions. By fostering this sense of inner security, spirituality helps exhausted employees maintain motivation to thrive at work and engage less in deviant behaviours. Taken together, we propose the following hypothesis:

Hypothesis 4. Spirituality moderates the relationship between exhaustion and CWB-O, such that the relationship is weaker when spirituality is higher (vs. lower).

Building on Hypotheses 1 and 4, we propose that the indirect relationship between extreme context exposure and CWB-O, mediated by exhaustion, is weaker for employees with higher spirituality. This second-stage moderated mediation model suggests that the effect of extreme context exposure on CWB-O varies based on the employee's level of spirituality. We argue that employees exposed to extreme contexts may engage in CWB-O as a coping mechanism. Coping mechanisms are shaped by how individuals perceive the source of stress (Tomaka et al., 1993), and spiritual employees are likely to view stressful events as less threatening (Piff et al., 2015). In addition, the connection to the sacred provides them with a sense of purpose and stability, enabling them to draw on inner strength and stay grounded in challenging circumstances (Ganzin et al., 2020; Partouche-Sebban et al., 2021). Therefore, employees with higher levels of spirituality are less likely to resort to CWB-O when exposed to extreme context. Conversely, employees with lower spirituality are less equipped to cope with extreme context exposure and are more prone to CWB-O. Taken together, we propose the following hypothesis:

> **Hypothesis 5.** Spirituality moderates the indirect link between extreme context exposure and CWB-O via exhaustion, such that the indirect effect of exhaustion is weaker when spirituality is higher (vs. lower).

THE CURRENT RESEARCH

We conducted two studies in the extreme work contexts of aviation and shipping to test and validate our conceptual model across distinct settings. Study 1 focussed on testing the main mediation model (i.e. Hypothesis 1) by using an aviation sample. Study 2 tested the overall research model (Hypotheses 1–5) by using a shipping sample. This multi-study design enhances the generalisability and external validity of our findings (Hochwarter et al., 2011). Both aviation and shipping involve extreme events with severe physical, psychological or material consequences that employees perceive as unbearable and may exceed organisational control (Hällgren et al., 2018; Hannah et al., 2009). In Study 1, we collected data from flight cadre experiencing extreme events such as loss of flight control, emergency landings, cabin safety failures, adverse weather and aggressive passengers. Study 2 replicated and extended these findings by collecting data from seafarers exposed to extreme events like adverse weather, war zones, dangerous cargo and onboard injuries or illnesses. This approach not only mitigates limitations such as selection bias and restricted internal validity but also expands our scope by examining the moderating effects of authentic leadership and spirituality on the indirect relationship between extreme context exposure and CWB-O.

STUDY 1 (AVIATION) – METHODS

Sample and procedure

Flight cadre from three aviation companies in Iran participated in the study, encompassing roles such as captains, first officers, second officers, flight pursers and flight attendants. Because of logistical challenges and company-imposed restrictions on accessing flight cadre, we employed a purposive convenience sampling strategy (Etikan, 2016). Participant recruitment, led by the third author, was facilitated through direct collaboration with company

representatives, who received formal briefings about the study and were asked to personally distribute the surveys to active flight cadre. To reduce sampling bias and enhance representativeness, we explicitly encouraged participation across both flight deck and cabin crew and across various ranks. Data collection was scheduled around operational constraints: the participants were instructed to complete the surveys only during non-duty periods (e.g. layovers or rest times) to avoid interference with work responsibilities or regulatory compliance. To ensure confidentiality, completed surveys were returned to the third author in sealed envelopes.

The study followed a two-stage design. At Time 1 (T1), data on participants' demographics and extreme context exposure were collected. Time 2 (T2) occurred 1 week later, capturing data on exhaustion and CWB-O. Unique identification codes were assigned to participants to securely match responses across stages, ensuring data integrity. We obtained full ethical approval prior to data collection and strictly followed all university ethical guidelines (institution name withheld for anonymity). The participation was entirely voluntary, and participants were clearly informed that their responses would be used exclusively for academic research. At every stage, they were made aware of the study's purpose and assured of both anonymity and confidentiality.

A total of 300 flight cadre members completed the surveys. After removing three cases with no variation across all research variables, the final valid sample consisted of 297 participants. Among these participants, 65.2% were males. Their ages ranged from 16.9% in the 18–25 years group to 23.6% in the above 58 years group. Tenure in the organisation ranged from 13.5% having a tenure of less than 1 year to 15.9% having a tenure above 20 years. In terms of marital status, 35.1% were single, while 64.9% were married. Fifty-three percent of them held an undergraduate degree and 47% held a postgraduate degree. Rank in the organisation ranged from 8.8% of them with the captain rank to 43.2% of them with the flight attendant rank.

Measures

The surveys, administered in Persian, were translated from English by the third author and back-translated by the first author to ensure consistency (Klotz et al., 2023). Both bilingual authors have academic experience in Persian and English contexts.

Extreme context exposure

We asked flight cadre to report how frequently they had personally witnessed or experienced each of nine extreme aviation-related events over the course of their careers, using the prompt: 'During your career, please indicate how many times you witnessed or experienced the following extreme events.' The list included (1) severe pilot error, (2) emergency landing, (3) runway excursion, (4) loss of flight control, (5) hijack, (6) cabin safety failure, (7) crew flight scheduling issues, (8) extreme weather conditions and (9) aggressive passengers. These items were selected based on prior studies identifying psychologically and operationally distressing conditions in aviation settings (e.g. Sivakumar, 2022). We followed prior research on extreme events (e.g. Eberly et al., 2017) and treated this measure as a checklist of discrete event types, using the mean score across all nine events as a practical indicator of employees' overall exposure to extreme contexts (note that computation of internal consistency is therefore not appropriate for this variable). The participants rated the frequency of each event on a 4-point scale: 1 = *0 times*, 2 = *1–3 times*, 3 = *4–6 times* and 4 = *more than 6 times*.

Exhaustion

Exhaustion was measured using the 8-item measure from the Oldenburg Burnout Inventory (OLBI, Demerouti et al., 2010). A sample item is 'during my work, I often feel emotionally drained' ($\alpha = 0.78$). These items were rated on a 4-point Likert scale from 1 (*strongly disagree*) to 4 (*strongly agree*).

CWB-O

CWB-O was measured using the 10-item measure from the deviance work scale (Bennett & Robinson, 2000). A sample item is 'intentionally worked slower than you could have worked' ($\alpha = 0.79$). Items were rated on a 5-point Likert scale from 1 (*never*) to 5 (*always*).

Control variables

Given the novelty of our study context, and the potential associations of personal and employment background with measured variables (e.g. exhaustion, extreme context exposure), we controlled participants' gender (0 = male, 1 = female), age (0 = 18–25 years to 5 = above 58 years), tenure in organisation (0 = less than 1 year to 5 = above 20 years), marital status (0 = single, 1 = married, 2 = divorced), education level (0 = undergraduate, 1 = postgraduate, and 3 = Doctorate) and rank (0 = captain to 4 = flight attendant).

STUDY 1 – RESULTS

We performed a series of confirmatory factor analyses (CFA) to assess the construct validity of the three latent variables in this study: extreme context exposure, exhaustion and CWB-O. Given the substantial number of items associated with each variable (nine for extreme context exposure, eight for exhaustion, and 10 for CWB-O), we grouped the items into three parcels for extreme context exposure and exhaustion, and four parcels for CWB-O, with two or three items randomly assigned to each parcel. Results showed that a two-factor model fit the data well (χ^2 [32] = 61.47, $p < .001$, root mean square error of approximation [RMSEA] = 0.06, confirmatory fit index [CFI] = 0.98, Tucker–Lewis Index [TLI] = 0.96, standardised root mean square residual [SRMR] = 0.04). All elements significantly loaded on their respective latent factors (standardised factor loadings ranging from 0.64 to 0.84). This model provided superior fit compared to a two-factor model in which exhaustion and CWB-O were loaded on the same factor ($\Delta\chi^2$ (2) = 224.73, $p < .01$; RMSEA = 0.16, CFI = 0.78, TLI = 0.71, SRMR = 0.10), a two-factor model in which extreme context exposure and exhaustion were loaded on the same factor ($\Delta\chi^2$ (2) = 329.68, $p < .01$; RMSEA = 0.19, CFI = 0.69, TLI = 0.59, SRMR = 0.13), and a single-factor model in which all parcels were loaded on the same factor ($\Delta\chi^2$ (3) = 353.48, $p < .01$; RMSEA = 0.19, CFI = 0.67, TLI = 0.58, SRMR = 0.12). Because exhaustion and CWB-O were measured simultaneously, we conducted Harman's single-factor test to assess whether common method variance (CMV) significantly influenced the results. We compared the hypothesised model with an alternative model that included an additional orthogonal method factor comprising all items collected at the same time. The inclusion of this factor did

TABLE 1 Variable, means, standard deviations and correlations in Study 1.

Variables	Means	SD	1	2	3	4	5	6	7	8
1. Gender	0.35	0.48								
2. Age	2.19	1.41	−.01							
3. Tenure in organisation	2.48	1.63	−.01	.07						
4. Marital status	0.65	0.48	−.06	.01	.04					
5. Education	0.47	0.50	.07	.05	−.08	−.10				
6. Rank	2.82	1.33	.07	−.03	−.01	.01	.10			
7. Extreme context exposure	2.20	0.49	.11	−.03	.06	−.03	−.03	−.07		
8. Exhaustion	3.19	0.39	.05	−.03	−.04	.01	−.03	−.02	.12*	
9. CWB-O	3.58	0.68	.04	.04	.08	−.03	−.10	.03	.54**	.43**

Note: $N = 297$.
*$p < .05$, and **$p < .01$.

not significantly improve model fit ($\Delta\chi^2(7) = 14.17$, *n.s.*; RMSEA = 0.06, CFI = 0.98, TLI = .96, SRMR = 0.07), indicating that CMV did not account for substantial variance in the data and did not affect the interpretation of our findings. Table 1 presents descriptive statistics and correlations among variables.

We used path analysis in Mplus to test our hypotheses. We first tested a partial mediation model with the direct effect from extreme context exposure to CWB-O considered. All demographics and event contents were used to predict the mediators and outcome. This model was fully saturated with a significant direct effect ($B = 0.70$, SE = 0.07, $p < .001$). We concluded that exhaustion partially mediated the relationship between extreme context exposure and CWB-O, and we hereafter report on findings from this full mediation model.

As shown in Table 2, extreme context exposure was significantly related to exhaustion ($B = 0.10$, SE = 0.05, $p < .05$), and exhaustion was significantly related to CWB-O ($B = 0.65$, SE = 0.08, $p < .001$). To estimate the confidence intervals of the indirect effect proposed in Hypothesis 1, we conducted a bootstrapping analysis with 5000 resampling and found that the indirect effect of exhaustion was significant as indicated by the 95% bias-corrected confidence intervals (CIs) (*indirect effect* = 0.06, 95% confidence intervals [0.004, 0.15] which excluded 0), supporting Hypothesis 1.[1]

STUDY 2 (SHIPPING) – METHODS

Sample and procedure

The participants were recruited from different shipping companies in Iran, representing roles such as captains, chief officers, second officers and third officers in the deck department, as well as chief engineers, second engineers, third engineers and fourth engineers in the engine

[1]We conducted a Variance Inflation Factor (VIF) analysis to assess the potential impact of multicollinearity in the mediation model. All VIF values ranged from 1.011 to 1.040, well below the commonly used cut-off threshold of 10, suggesting that multicollinearity did not meaningfully affect our results or interpretations.

TABLE 2 Regression results for the hypothesised mediation model (coefficients and standard errors) in Study 1.

	Exhaustion	CWB-O	
Control variables			
Gender	0.03(0.05)	−0.05(0.06)	
Age	−0.01(0.02)	0.03(0.02)	
Tenure in organisation	−0.01(0.02)	0.02(0.02)	
Marital status	0.01(0.05)	−0.04(0.06)	
Education	−0.02(0.05)	−0.11(0.06)	
Rank	0.00(0.02)	**0.04*(0.02)**	
Independent variable			
Extreme context exposure	**0.10*(0.05)**	**0.70***(0.06)**	
Mediator			
Exhaustion		**0.65***(0.08)**	
R^2	2%	45%	
Indirect effect of exhaustion	***b***	**CIs**	
		LL	UL
	0.06	0.004	.15

Note: $N = 297$. Significant standardised regression coefficients (standard errors) are in bold. CIs = confidence intervals; LL = lower limit 95% CI; UL = upper limit 95% CI.
*$p < .05$, **$p < .01$, and ***$p < .001$.

department. Seafarers typically work on ships for 3 to 4 months, followed by 2 to 3 months of rest. Similar to Study 1, we employed purposive convenience sampling, a strategy often used when researchers must rely on accessible participants within hard-to-reach or specialised populations. The first author initially contacted former colleagues serving as officers or engineers on various ships and asked them to distribute the survey among their shipboard colleagues. To minimise sampling bias and increase representativeness, we encouraged distribution across a broad range of roles and ranks, explicitly inviting participation from seafarers in both the deck and engine departments. This approach was particularly appropriate given the logistical challenges of accessing seafarers, who work in isolated, mobile and time-sensitive operational settings. The participants completed the surveys while onboard, during periods at anchor or during cargo operations in port. Once completed, surveys were placed in sealed envelopes and sent to the first author after disembarkation from ships.

Given the unique work schedule of seafarers, where they are on duty for 4 h followed by 8 h of rest, we adapted our data collection to fit into their two 4-h shifts. At the beginning of the first shift, we collected data on extreme context exposure, authentic leadership, spirituality and participants' demographics. Three days later, during their 4-h shift, we collected data on exhaustion at the start of the shift, followed by CWB-O at the end of that shift. A total of 309 seafarers participated in the survey. Unique identification codes were used to ensure accurate matching of data throughout the study. Similar to Study 1, we strictly followed ethical guidelines and participants were assured of both anonymity and confidentiality.

All of the participants were male. Their ages ranged from 18 to 25 years (2.9%) to over 58 years (4.9%). Their organisational tenure ranged from less than 1 year (2.9%) to more than

20 years (5.5%). In terms of marital status, 32.7% were single, 60.8% were married and 6.5% were divorced. Regarding education, 79.9% held an undergraduate degree, while 20.1% held a post-graduate degree. Their ranks ranged from 0 = fourth engineer (9.4%) to 7 = captain (8.7%).

Measures

The surveys in this study were administered in English, the official language among seafarers in Iran. To reduce response bias, we included reverse-worded items, such as those on exhaustion, to detect inconsistent responses (Podsakoff et al., 2003). Exhaustion ($\alpha = 0.82$) and CWB-O ($\alpha = 0.85$) were measured using the same constructs as Study 1.

Extreme context exposure

We asked seafarers to report how frequently they had personally witnessed or experienced each of nine extreme events over the course of their maritime careers, using the prompt: 'During your career, please indicate how many times you witnessed or experienced the following extreme events.' The list of events included: (1) ship collision and grounding; (2) electricity, fire or explosion; (3) crew injuries or illness because of working on ships; (4) piracy; (5) poisoning by toxic gas or exposure to dangerous chemicals; (6) trade in a war zone; (7) loss of manoeuvrability in a congested area; (8) arrest by third parties; and (9) exposure to extreme weather at sea. These events were selected based on prior literature identifying high-risk and distressing operational challenges specific to the shipping industry (e.g. Li et al., 2014). The participants responded using a 4-point scale: 1 = *0 times*, 2 = *1–3 times*, 3 = *4–6 times* and 4 = *more than 6 times*. An overall exposure score was calculated by averaging participants' ratings across all nine events, reflecting their cumulative exposure to extreme events during their careers.

Authentic leadership

Authentic leadership was measured using the 14-item measure from Neider and Schriesheim (2011). A sample item is 'my leader shows consistency between his/her beliefs and actions.' ($\alpha = 0.92$). These items were rated on a 5-point Likert scale from 1 (*strongly disagree*) to 5 (*strongly agree*). In the shipping industry, the hierarchical structure ensures clear reporting lines: all deck officers report to the captain, and all engineers report to the chief engineer, who in turn reports to the captain. Captains themselves report to shore-based superintendents. Within this structure, all seafarers, regardless of rank, engage in frequent, often daily, operational interactions with their direct supervisors. As such, all participants were well positioned to provide informed and meaningful evaluations of their supervisors' leadership behaviours.

Spirituality

Spirituality was measured using the 23-item measure from Delaney (2005). A sample item is 'my faith in a higher power/universal intelligence helps me cope during challenges in my life'

($\alpha = 0.97$). These items were rated on a 6-point Likert scale from 1 (*strongly disagree*) to 6 (*strongly agree*).

Control variables

As in Study 1, we controlled for tenure in the organisation (0 = less than 1 year to 5 = over 20 years), marital status (0 = single, 1 = married, 2 = divorced), and rank (0 = fourth engineer to 7 = captain).

STUDY 2 – RESULTS

A series of CFA were conducted to assess the construct validity of the five latent variables, including extreme context exposure, exhaustion, spirituality, authentic leadership and CWB-O. Again, given the substantial number of items associated with each variable (e.g. 14 for authentic leadership and 23 for spirituality), we grouped the items into three parcels for extreme context exposure and CWB-O, two parcels for exhaustion, six parcels for spirituality and four parcels for authentic leadership, with three or four items randomly assigned to each parcel. Results showed that a five-factor model fit the data well (χ^2 [125] = 456.82, $p < .001$, RMSEA = 0.09, CFI = 0.93, TLI = 0.91, SRMR = 0.04). As shown in Table 3, this model provided superior fit to other alternative models.

Similar to Study 1, we also compared the hypothesised five-factor model with an alternative model that included a method factor for extreme context exposure, authentic leadership and spirituality—variables measured at the same time. This model failed to converge because of identification issues. Following prior studies (e.g. Porter et al., 2016), we addressed this by constraining all loadings of the method factor to equality. This alternative model yielded a significantly improved fit compared to the hypothesised model ($\Delta\chi^2(4) = 20.26$, $p < .001$; RMSEA = 0.09, CFI = 0.93, TLI = 0.92, SRMR = 0.05). To further assess the influence of CMV, we calculated the proportion of variance explained by the method factor, following prior studies. The CMV factor accounted for only 6% of the total variance, which is below the threshold typically reported in similar research (e.g. Neubert et al., 2008; Williams et al., 1989). We concluded that CMV had a limited influence on our results.

TABLE 3 Fit comparisons of alternative models in Study 2.

	χ^2	*df*	$\Delta\chi^2$ (*df*)	RMSEA	CFI	TLI	SRMR
Hypothesised model	456.82	125	--	0.09	0.93	0.91	0.04
Model A	628.72	129	171.90**(4)	0.11	0.89	0.87	0.07
Model B	630.08	132	173.26**(7)	0.11	0.89	0.88	0.07
Model C	1569.60	134	1112.78**(9)	0.19	0.69	0.65	0.14
Model D	1817.95	135	1361.13**(10)	0.20	0.64	0.59	0.14

Note: Model A: Four-factor model combining exhaustion and CWB-O; Model B: three-factor model combining extreme context exposure, exhaustion and CWB-O as one factor; Model C: two-factor model combining extreme context exposure, exhaustion and CWB-O, and spirituality and authentic leadership as the other factor; and Model D: 1-factor model combining items as one factor. *$p < .05$, and **$p < .01$.

Table 4 presents descriptive statistics and correlations among variables.

We conducted path analysis in Mplus to test our hypotheses. To test the mediation effect of exhaustion, a partial mediation model with the direct impact from extreme context exposure to CWB-O considered was first tested. All demographics were regressed on exhaustion and CWB-O. This model was fully saturated with a non-significant direct effect ($B = 0.02$, SE = 0.10, $p = .86$). Next, a full mediation model was tested, showing a good fit to the data ($\chi^2(1) = 0.001$, RMSEA = 0.00, CFI = 1.00, TLI = 1.00, SRMR = 0.00). We concluded that exhaustion fully mediated the relationship between the extreme context exposure and CWB-O, and we present the findings from this full mediation model hereafter.

Table 5 presents the estimated regression coefficients for the mediation and mediated moderation models. Mediation results are shown in Model 1, and Models 2 and 3 show the moderating effects of authentic leadership and spirituality, respectively. As shown in Model 1a, extreme context exposure was significantly related to exhaustion ($B = 0.25$, SE = 0.09, $p < .01$), and exhaustion was significantly related to CWB-O ($B = 0.55$, SE = 0.07, $p < .001$). To estimate the confidence intervals of the indirect effect proposed in Hypothesis 1, we conducted a bootstrapping analysis with 5000 resampling and found that the indirect effect of exhaustion was significant as indicated by the 95% bias-corrected confidence intervals (CIs) (*indirect effect* = 0.14, 95% confidence intervals [0.05, 0.24] which excluded 0), supporting Hypothesis 1.

To test the moderating effect of authentic leadership, we specified authentic leadership as the moderator in the mediation model to predict CWB-O. As shown in Table 5, we found that the interaction of exhaustion and authentic leadership was significantly related to CWB-O ($B = -0.54$, SE = 0.12, $p < .01$). The interaction pattern was presented in Figure 2. Simple slope analyses suggested that the influence from exhaustion to CWB-O was stronger when authentic leadership was low (1 SD below the mean: $B = 0.89$, SE = 0.12, $p < .001$) than when it was high (1 SD above the mean: $B = 0.23$, SE = 0.09. $p < .05$). Hypothesis 2 was supported. Further, the indirect effect of exhaustion was stronger when authentic leadership was low (conditional indirect effect = 0.22, 95% CIs [0.07, 0.40]), while it was not significant when authentic leadership was high (conditional indirect effect = 0.06, 95% CIs [0.01, 0.14]). Hypothesis 3 received support.

TABLE 4 Variable, means, standard deviations and correlations in Study 2.

Variables	Means	SD	1	2	3	4	5	6	7
1. Tenure in organisation	2.57	1.10							
2. Marital status	0.74	0.57	.48**						
3. Rank	3.28	2.22	−.37**	−.26**					
4. Extreme context exposure	1.93	0.28	.15**	.08	−.06				
5. Exhaustion	2.64	0.43	−.24**	−.12*	.18**	.12*			
6. Authentic leadership	3.49	0.61	.08	−.11	−.06	−.10	−.42**		
7. Spirituality	4.25	0.85	.18**	.07	−.02	−.04	−.53**	.35**	
8. CWB-O	2.23	0.55	−.20**	−.06	.08	.04	.44**	−.64**	−.29**

Note: Tenure in organisation was coded as 0 = less than 1 year to 5 = above 20 years. Marital status was coded as 0 = single, 1 = married or living as married and 3 = divorced. Rank was coded as 0 = fourth engineer to 7 = captain. $N = 309$.
*$p < .05$, and **$p < .01$.

TABLE 5 Regression results for the hypothesised mediated moderation model (coefficients and standard errors) in Study 2.

	Exhaustion		CWB-O	
Control variables	Model 1a	Model 1b	Model 2	Model 3
Tenure in organisation	**−0.09******(0.03)**	**−0.07*****(0.03)**	**−0.07*****(0.03)**	−0.05(0.03)
Marital status	0.02(0.01)	−0.01(0.01)	0.05(0.06)	0.05(0.05)
Rank	0.00(0.05)	0.04(0.06)	−0.01(0.01)	0.01(0.01)
Independent variable				
Extreme context exposure	**0.25******(0.09)**			
Moderator				
Authentic leadership			**−0.33*******(0.04)**	
Spirituality				−0.02(0.05)
Mediator				
Exhaustion		**0.55*******(0.07)**	**0.56*******(0.07)**	**0.18******(0.07)**
Interaction terms				
Exhaustion × authentic leadership			**−0.54*******(0.13)**	
Exhaustion × spirituality				**−0.14*****(0.07)**
R^2	**0.09****	**0.21*****	**0.27*****	**0.39*****

		CIs	
Indirect effect of exhaustion	**b**	**LL**	**UL**
	0.14	0.05	0.24
Conditional indirect effect of authentic leadership			
High authentic leadership	0.06	0.01	0.14
Low authentic leadership	0.22	0.07	0.40
Conditional indirect effect of spirituality			
High spirituality	0.02	−0.02	0.07
Low spirituality	0.08	0.03	0.15

Note: $N = 309$; Significant unstandardised regression coefficients (standard errors) are in bold. CIs = confidence intervals; LL = lower limit 95% CI; UL = upper limit 95% CI.
*$p < .05$, **$p < .01$, and ***$p < .001$.

Similarly, for the moderating effect of spirituality, Table 5 showed that the interaction term of exhaustion and spirituality was significantly related to CWB-O ($B = -0.14$, SE = 0.07, $p < .05$). The plot of the interaction effect is shown in Figure 3. Simple slope analyses showed that exhaustion significantly increased CWB-O when spirituality was low (1 SD below the mean: $B = 0.30$, SE = 0.09, $p < .01$), while this effect was not significant when spirituality was high (1 SD above the mean: $B = 0.06$, SE = 0.09, $p = .49$). Hypothesis 4 was supported. Further, we examined the extent to which the overall mediation effect of exhaustion was conditionally influenced by the levels of spirituality. As expected, the indirect effect of exhaustion was significant when spirituality was low (conditional indirect effect = 0.08, SE = 0.03, 95% CIs [0.03,

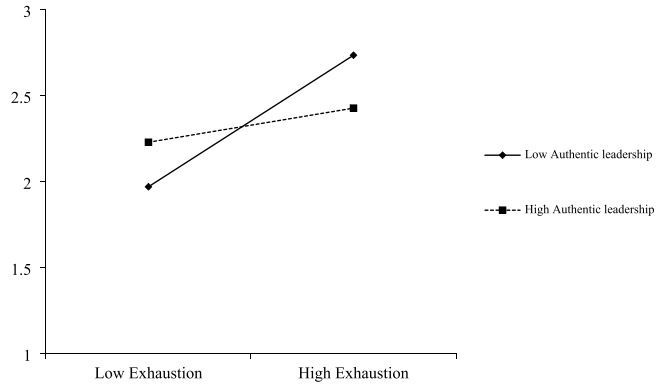

FIGURE 2 The relationship between exhaustion and CWB-O under conditions of low and high authentic leadership.

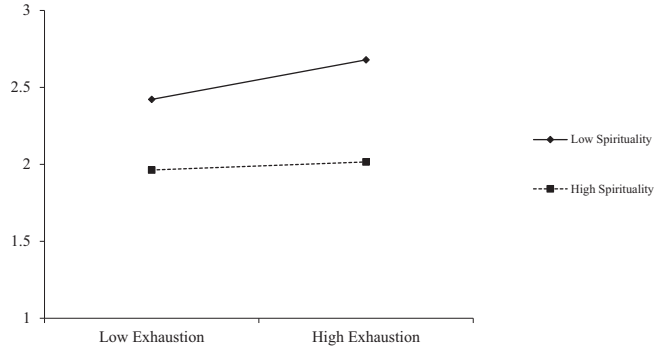

FIGURE 3 The relationship between exhaustion and CWB-O under conditions of low and high spirituality.

0.15]), while it was not significant when spirituality was high (conditional indirect effect = 0.02, SE = 0.02, 95% CIs [−0.02, 0.07]). Therefore, Hypothesis 5 was supported.[2]

DISCUSSION

Our research investigated a micro-foundational process by which extreme context exposure is associated with CWB-O. Our primary aim was to demonstrate how extreme context exposure (i.e. frequent exposure to extreme events) influences psychological and behavioural responses. Using the JD-R as a theoretical framework, we established that extreme context exposure is positively linked to CWB-O, with exhaustion linking the two variables. Our findings suggest that employees facing higher levels of extreme context exposure experience a deeper emotional toll, which increases the likelihood of workplace deviant behaviours. Furthermore, our analysis

[2]Again, we conducted a VIF analysis to assess the potential impact of multicollinearity. All VIF values in the moderated mediation model ranged from 1.06 to 6.70, below the commonly used cut-off threshold of 10, suggesting that multicollinearity did not meaningfully affect our results or interpretations.

highlighted the significant moderating effects of authentic leadership and spirituality in buffering both the direct relationship between exhaustion and CWB-O, and the indirect link between extreme context exposure and CWB-O. Specifically, employees with higher levels of job and personal resources, such as authentic leadership and spirituality, were better equipped to mitigate the negative effects of extreme context exposure, reducing engagement in CWB-O. Our micro-foundational model was tested among seafarers, a population that regularly encounters life-threatening situations at sea.

Theoretical implications

Our study offers several theoretical implications. First, it presents a novel perspective on the micro-foundations of extreme contexts by examining how extreme context exposure can negatively impact employee well-being and drive deviant behaviours. Previous research on extreme contexts has predominantly emphasised macro-level responses, focussing on organisational strategies for adaptation and crisis management in response to workplace emergencies (Bothner et al., 2007; Feldman, 2004; Shepherd & Williams, 2014). These studies have largely addressed structural and operational approaches, often neglecting the individual-level processes that unfold in these high-risk environments. In response to Hällgren et al.'s (2018) call for a more individual-centred perspective, our approach demonstrates that heightened extreme context exposure can significantly compromise individual well-being, which subsequently increases the likelihood of their deviant behaviours. Thus, by shifting the focus from macro-level adaptations to the micro-level experiences of employees, our study highlights the critical importance of understanding how extreme context exposure can erode employees' resources and lead to counterproductive outcomes.

Second, we contribute to the JD-R literature by conceptualising extreme context exposure as a distinct and underexplored job demand. Aligned with Hällgren et al. (2025, p. 1072), we adopt the 'extreme as event' perspective, which treats extreme events as objective occurrences with identifiable physical and emotional demands. This framing enables a clearer understanding of how such events shape employee responses and necessitate specific coping strategies. Unlike conventional job demands, extreme context exposure involves high-intensity, often unpredictable challenges embedded in material and embodied experiences, for instance, the physical strain of operating under danger (de Rond et al., 2019) or adapting to volatile environments (Wright et al., 2021). The frequency of such events, particularly in risky contexts, heightens strain and reduces recovery opportunities, making exhaustion more likely. While meta-analytic findings by Nahrgang et al. (2011) have shown that physically hazardous and emotionally demanding work predict burnout through the JD-R's health impairment process, our study extends this by empirically demonstrating that frequent exposure to extreme events constitutes a qualitatively unique job demand that depletes employees' mental and physical resources over time.

Third, as part of our micro-foundational reasoning, we extend previous research (Eberly et al., 2017; Gray et al., 2023) by examining how extreme context exposure shapes employee responses in the workplace. In doing so, we address Hannah et al.'s (2009) call to explore the intensifying factors of extreme contexts—specifically, time and complexity—by focussing on the frequency of extreme events as a key driver of behaviours in risky contexts (Hällgren et al., 2018; Leuridan & Demil, 2022). Drawing on the JD-R theory, our study reveals that extreme context exposure plays a crucial role in understanding how individuals react to atypical

work situations. Specifically, according to the health impairment process, extreme context exposure demands increased effort from employees, which depletes their physical, cognitive and emotional resources, eventually leading to exhaustion (Bakker et al., 2023) and engagement in CWB-O, as a way to conserve their limited resources (Bakker & Costa, 2014). In risky contexts, such as those in our study, extreme context exposure may represent a persistent level of high demands over time, reducing opportunity for recovery and heightening the propensity for people to experience exhaustion (Mäkikangas et al., 2021). By emphasising the significance of extreme context exposure, our research makes a contribution to future studies on extreme work contexts. It highlights the need for targeted interventions and support mechanisms that consider the unique experiences and adaptive capacities of individuals facing frequent extreme stressors.

Fourth, we respond to calls for research on the antecedents of CWB-O (Bollmann & Krings, 2016; Marcus et al., 2016), by identifying both situational and personal factors that contribute to these behaviours. Specifically, we examine extreme context exposure as a situational antecedent and employee exhaustion as a personal antecedent of CWB-O. While existing literature has predominantly focussed on organisational factors such as justice and workplace climate (Bollmann & Krings, 2016; Cohen & Diamant, 2019), leadership styles (Carpenter et al., 2021), and individual traits (Spector, 2011), the role of situational triggers—particularly in high-risk environments—remains underexplored. This study expands the scope of CWB-O research by integrating the JD-R theory to explain how extreme context exposure acts as a significant situational stressor that depletes employees' resources, thus increasing vulnerability to exhaustion and CWB-O.

Fifth, to deepen our understanding of individual responses in extreme contexts, we investigated the critical roles of authentic leadership and spirituality in buffering the adverse effects of high exposure to extreme events. Authentic leaders provide emotional and social support through self-awareness, relational transparency, internalised moral perspective and balanced decision-making (Walumbwa et al., 2008). For exhausted employees, who perceive their resources as limited and aim to conserve them, this support helps boost positive emotions (Gardner et al., 2005) and reduce negative ones (Fredrickson, 2001), thus decreasing the likelihood of engaging in CWB-O. Similarly, spirituality strengthens resilience, fosters psychological ownership of roles, provides a solid framework for ethical decision-making and instils a sense of inner security. These qualities help employees manage exhaustion more effectively, reducing the tendency towards CWB-O (Bickerton et al., 2014). This aligns with previous research identifying spirituality as a valuable coping strategy during stressful events (Ganzin et al., 2020; Partouche-Sebban et al., 2021).

Finally, this study contributes to research on the JD-R theory by applying it to extreme contexts, a setting that has seen limited exploration and empirical validation (Hällgren et al., 2018). The JD-R theory posits that interactions between job demands and resources shape both health-related and job-related outcomes (Bakker et al., 2023). In our study, we identify extreme context exposure as a significant job demand, which initiates health impairment processes that can negatively impact employee well-being (i.e. causing exhaustion) and lead to dysfunctional behaviours (i.e. CWB-O) (Bakker et al., 2023). To counter these adverse effects, we examine authentic leadership as a job resource and spirituality as a personal resource. By exploring the interplay among job demands (extreme context exposure), job resources (authentic leadership), personal resources (spirituality), strain (exhaustion) and behaviour (CWB-O), this study validates the JD-R theory's applicability to high-stress environments.

Practical implications

Our findings have practical implications for improving employee well-being and behaviours in extreme contexts. Organisations should systematically monitor extreme context exposure to mitigate its adverse effects. First, collecting and analysing data on extreme events and their impacts on emotional, attitudinal, and behavioural outcomes enable proactive interventions. Job redesign initiatives such as rotation schedules, temporary relief programmes and responsibility reallocation can reduce prolonged exposure to high-risk environments and facilitate recovery, thus improving well-being (Bakker & Demerouti, 2017; Sonnentag & Fritz, 2015).

Second, organisations are encouraged to invest in resilience-building interventions to support employees in managing stress and uncertainty, particularly amid frequent extreme events. Effective measures include mental health support, resilience training and coping workshops, which have been shown to enhance both employee well-being and organisational outcomes (Hartmann et al., 2020; Kuntz et al., 2017). Tailored employee assistance programmes, such as counselling, peer support groups and confidential helplines, further address the emotional challenges of working in extreme contexts, fostering a supportive workplace culture.

Third, organisations should prioritise authentic leadership development through targeted programmes that enhance self-awareness, relational transparency and integrity. By fostering emotional intelligence, self-reflection and values-driven leadership, training initiatives enable leaders to create supportive work environments that mitigate exhaustion and inspire teams, especially in challenging situations (Shamir & Eilam, 2005; Walumbwa et al., 2008). Finally, organisations should integrate spiritual development into their training activities, recognising its teachable nature (Dent et al., 2005). This could involve developing and delivering training programmes and materials as well as offering flexible schedules to accommodate employees' spiritual practices.

Strengths, limitations and future research directions

There are several limitations of our study to note. Our design did not permit us to assess temporal dynamics and draw causal conclusions (which would require repeated measures). Although a reversed direction from exhaustion to extreme context exposure is unlikely—since such exposure is largely objective and not driven by employees' psychological states—a reversed relationship between exhaustion and CWB-O is plausible. Employees who engage in unethical or counterproductive behaviours may later experience exhaustion because of guilt, strain (Chen et al., 2023) and psychological tension from moral dissonance (Moore & Gino, 2015). In our study, exhaustion and CWB-O were measured at the same time in Study 1 and time-lagged within a single shift in Study 2, but without accounting for autocorrelation, limiting causal inference (Ogbonnaya et al., 2023). Future research should use longitudinal designs that track within-person changes over time to more effectively capture causal patterns. Second, this study relied on self-report measures, which are susceptible to recall and social desirability biases, especially when participants downplay their CWB-O. Although Berry et al.'s (2012) meta-analysis suggests that self-reported and other-reported CWB scores follow similar patterns and that anonymity encourages honesty, these biases remain important to address. Future research could mitigate these biases by using multi-source data (e.g. records of actual workplace incidents and frauds), incorporating objective measures and ensuring anonymity to enhance response accuracy.

In addition, this study focussed on employees in aviation and shipping, industries that represent risky contexts involving frequent and anticipated exposure to extreme events. This focus limits the generalisability of our findings to other high-risk environments. Emergency and disrupted contexts also differ from risky ones in terms of event frequency, predictability and organisational readiness, all of which can shape employees' psychological responses and behaviours in distinct ways (Hällgren et al., 2018). While these three types—risky, emergency and disrupted—are best understood as ideal types and analytical tools rather than strict categories, it is often difficult to clearly classify a context as one or the other, as this may vary depending on the observer's perspective (Hällgren et al., 2025). Together, we encourage future research to replicate and extend our findings not only to other risky settings but also to emergency and disrupted contexts to better understand how different extreme environments uniquely influence employee well-being and counterproductive behaviour.

Furthermore, Iran's cultural context, characterised by strong personal relationships, high power distance and a strong emphasis on individual achievement (Javidan & Dastmalchian, 2003), influences how employees respond to strain. Open defiance or interpersonal conflict (CWB-I) is typically discouraged in hierarchical cultures that emphasise respect for authority, which may lead employees to express frustration through more covert forms of deviance, such as CWB-O. This cultural backdrop also strengthens the moderating effects of spirituality and authentic leadership. Spirituality, deeply embedded in Iranian religious and cultural identity, serves as a moral compass and coping resource during stress. Likewise, authentic leadership, emphasising moral guidance, aligns with cultural expectations of authority figures, enhancing its effectiveness in curbing deviant behaviour. Taken together, these cultural dynamics may limit the generalisability of our findings to other national contexts with different value systems.

Moreover, while this study identified exhaustion as a mediator, other mechanisms may also explain the relationship between extreme context exposure and CWB-O. For instance, moral disengagement—a set of cognitive mechanisms used to bypass moral self-regulation and justify unethical behaviour (Bandura, 1999)—has been shown to promote workplace misconduct, including CWB (Newman et al., 2020). Moral disengagement can mediate the link between extreme context exposure and CWB-O by allowing employees to justify harmful actions as acceptable responses to stress, thereby reducing guilt and enabling misconduct (Ogunfowora et al., 2022). Emotional regulation strategies refer to how individuals manage emotional responses to stress. Within these strategies, disengagement strategies (e.g. suppression and distraction) avoid processing emotions (Gross, 2015), while engagement strategies (e.g. reappraisal and support-seeking) actively address them (Sheppes et al., 2014). Extreme context exposure can increase reliance on disengagement strategies, which hinder emotional processing and thereby heighten the risk of CWB-O as a maladaptive response to unresolved stress (Melloy et al., 2024). Finally, organisational justice refers to employees' perceptions of fairness in outcomes, procedures and interpersonal treatment at work (Colquitt et al., 2001). Frequent exposure to extreme contexts can undermine these perceptions, such as feeling overlooked in decision-making or unfairly treated under stress, leading to negative affect like anger. According to Lazarus (1991), such emotions carry action tendencies (e.g. anger prompts retaliation), which increase the likelihood of CWB-O as a reaction to perceived injustice (Colquitt et al., 2013). Future research could explore these constructs to deepen understanding of this link.

While this study examined authentic leadership and spirituality as moderators, other factors, including workgroup dynamics, organisational identification and emotional intelligence,

may also influence how employees cope in extreme contexts. For example, deviant behaviour can spread within teams, as employees often model the antisocial actions of their peers (Robinson & O'Leary-Kelly, 1998). Organisational identification may lead employees to suppress dissent and even justify unethical behaviour to protect the organisation's or even their own image (Conroy et al., 2017). Additionally, emotional intelligence has been linked to lower engagement in counterproductive work behaviours (Jung & Yoon, 2012). Future research should explore how these factors shape the impact of extreme environments on employee deviance, including CWB-O.

Finally, we recognise that participants' hierarchical position may influence the frequency and depth of their interactions with leaders, which could in turn affect perceptions of authentic leadership. However, given the unique nature of the maritime work environment, characterised by the highly collaborative and interdependent nature of shipboard work, where effective coordination is essential for safety and performance, even higher-ranking seafarers maintain routine and task-critical communication with their immediate supervisors. Additionally, we controlled for participants' rank in all analyses to account for potential variability in leader proximity. These considerations support the validity of assessing authentic leadership perceptions across a range of roles in this context.

CONCLUDING COMMENTS

In this study, we utilised the JD-R theory to examine the relationship among extreme context exposure, employee well-being and deviant workplace behaviours. Extreme context exposure, functioning as a significant job demand, imposes considerable physiological and psychological strain, which depletes employees' resources and leads to exhaustion. In response, employees may engage in CWB-O as a means of conserving their remaining limited resources. These results highlight the critical need to understand how extreme context exposure impacts employee well-being and behaviours, particularly in extreme contexts where sustainability is a core concern. Furthermore, our study emphasises the mitigating role of authentic leadership and spirituality, which serve as critical moderators that weaken the negative effects of extreme context exposure on employee well-being and deviant behaviours. These insights contribute to a deeper understanding of employee responses in high-risk environments.

CONFLICT OF INTEREST STATEMENT

There is no conflict of interest to disclose.

DATA AVAILABILITY STATEMENT

The data that support the findings of this research are available from the corresponding author upon request.

ETHICS STATEMENT

Both studies received ethical approval from the University of Bedfordshire.

ORCID

Hamid Roodbari https://orcid.org/0000-0002-3001-293X
Benjamin Laker https://orcid.org/0000-0003-0850-9744

REFERENCES

Alarcon, G. M. (2011). A meta-analysis of burnout with job demands, resources, and attitudes. *Journal of Vocational Behavior*, *79*(2), 549–562. https://doi.org/10.1016/j.jvb.2011.03.007

Association of Certified Fraud Examiners. (2024). Occupational Fraud 2024: A Report to the Nations. https://legacy.acfe.com/report-to-the-nations/2024/

Avolio, B. J., Gardner, W. L., Walumbwa, F. O., Luthans, F., & May, D. R. (2004). Unlocking the mask: a look at the process by which authentic leaders impact follower attitudes and behaviors. *The Leadership Quarterly*, *15*(6), 801–823. https://doi.org/10.1016/j.leaqua.2004.09.003

Bakker, A. B., & Costa, P. L. (2014). Chronic job burnout and daily functioning: A theoretical analysis. *Burnout Research*, *1*(3), 112–119. https://doi.org/10.1016/j.burn.2014.04.003

Bakker, A. B., & Demerouti, E. (2017). Job demands–resources theory: Taking stock and looking forward. *Journal of Occupational Health Psychology*, *22*(3), 273–285. https://doi.org/10.1037/ocp0000056

Bakker, A. B., Demerouti, E., & Sanz-Vergel, A. (2023). Job demands–resources theory: Ten years later. *Annual Review of Organizational Psychology and Organizational Behavior*, *10*(1), 25–53. https://doi.org/10.1146/annurev-orgpsych-120920-053933

Balducci, C., Schaufeli, W. B., & Fraccaroli, F. (2011). The job demands–resources model and counterproductive work behaviour: The role of job-related affect. *European Journal of Work and Organizational Psychology*, *20*(4), 467–496. https://doi.org/10.1080/13594321003669061

Bandura, A. (1999). Moral disengagement in the perpetration of inhumanities. *Personality and Social Psychology Review*, *3*(3), 193–209. https://doi.org/10.1207/s15327957pspr0303_3

Bartone, P. T. (2006). Resilience under military operational stress: Can leaders influence hardiness? *Military Psychology*, *18*(sup1), S131–S148. https://doi.org/10.1207/s15327876mp1803s_10

Bennett, R., & Robinson, S. (2000). Development of a measure of workplace deviance. *The Journal of Applied Psychology*, *85*, 349–360. https://doi.org/10.1037/0021-9010.85.3.349

Berry, C. M., Carpenter, N. C., & Barratt, C. L. (2012). Do other-reports of counterproductive work behavior provide an incremental contribution over self-reports? A meta-analytic comparison. *Journal of Applied Psychology*, *97*(3), 613–636. https://doi.org/10.1037/a0026739

Bickerton, G. R., Miner, M. H., Dowson, M., & Griffin, B. (2014). Spiritual resources and work engagement among religious workers: A three-wave longitudinal study. *Journal of Occupational and Organizational Psychology*, *87*(2), 370–391. https://doi.org/10.1111/joop.12052

Bollmann, G., & Krings, F. (2016). Workgroup climates and employees' Counterproductive work behaviours: A social-cognitive perspective. *Journal of Management Studies*, *53*(2), 184–209. https://doi.org/10.1111/joms.12167

Bothner, M. S., Kang, J., & Stuart, T. E. (2007). Competitive crowding and risk taking in a tournament: Evidence from NASCAR racing. *Administrative Science Quarterly*, *52*(2), 208–247. https://doi.org/10.2189/asqu.52.2.208

Brammer, S., Branicki, L., & Linnenluecke, M. (2023). Disrupting management research? Critical reflections on British Journal of Management COVID-19 research and an agenda for the future. *British Journal of Management*, *34*(1), 3–15. https://doi.org/10.1111/1467-8551.12699

Carpenter, N. C., Whitman, D. S., & Amrhein, R. (2021). Unit-level counterproductive work behavior (CWB): A conceptual review and quantitative summary. *Journal of Management*, *47*(6), 1498–1527. https://doi.org/10.1177/0149206320978812

Chen, M., Chen, C. C., & Schminke, M. (2023). Feeling guilty and entitled: paradoxical consequences of unethical pro-organizational behavior. *Journal of Business Ethics*, *183*(3), 865–883. https://doi.org/10.1007/s10551-022-05109-x

Cohen, A., & Diamant, A. (2019). The role of justice perceptions in determining counterproductive work behaviors. *The International Journal of Human Resource Management*, *30*(20), 2901–2924. https://doi.org/10.1080/09585192.2017.1340321

Colquitt, J. A., Conlon, D. E., Wesson, M. J., Porter, C. O. L. H., & Ng, K. Y. (2001). Justice at the millennium: A meta-analytic review of 25 years of organizational justice research. *Journal of Applied Psychology*, *86*(3), 425–445. https://doi.org/10.1037/0021-9010.86.3.425

Colquitt, J. A., Scott, B. A., Rodell, J. B., Long, D. M., Zapata, C. P., Conlon, D. E., & Wesson, M. J. (2013). Justice at the millennium, a decade later: A meta-analytic test of social exchange and affect-based perspectives. *Journal of Applied Psychology*, *98*(2), 199–236. https://doi.org/10.1037/a0031757

Conroy, S., Henle, C. A., Shore, L., & Stelman, S. (2017). Where there is light, there is dark: A review of the detrimental outcomes of high organizational identification. *Journal of Organizational Behavior*, *38*(2), 184–203. https://doi.org/10.1002/job.2164

Crawford, E. R., LePine, J. A., & Rich, B. L. (2010). Linking job demands and resources to employee engagement and burnout: A theoretical extension and meta-analytic test. *Journal of Applied Psychology*, *95*(5), 834–848. https://doi.org/10.1037/a0019364

Day, D. V., Fleenor, J. W., Atwater, L. E., Sturm, R. E., & McKee, R. A. (2014). Advances in leader and leadership development: A review of 25years of research and theory. *The Leadership Quarterly*, *25*(1), 63–82. https://doi.org/10.1016/j.leaqua.2013.11.004

de Rond, M., Holeman, I., & Howard-Grenville, J. (2019). Sensemaking from the body: An enactive ethnography of rowing the Amazon. *Academy of Management Journal*, *62*(6), 1961–1988. https://doi.org/10.5465/amj.2017.1417

Delaney, C. (2005). The spirituality scale: Development and psychometric testing of a holistic instrument to assess the human spiritual dimension. *Journal of Holistic Nursing*, *23*(2), 145–167. https://doi.org/10.1177/0898010105276180

Demerouti, E. (2025). Job demands-resources and conservation of resources theories: How do they help to explain employee well-being and future job design? *Journal of Business Research*, *192*, 115296. https://doi.org/10.1016/j.jbusres.2025.115296

Demerouti, E., Bakker, A. B., & Halbesleben, J. R. B. (2015). Productive and counterproductive job crafting: A daily diary study. *Journal of Occupational Health Psychology*, *20*(4), 457–469. https://doi.org/10.1037/a0039002

Demerouti, E., Bakker, A. B., & Leiter, M. (2014). Burnout and job performance: The moderating role of selection, optimization, and compensation strategies. *Journal of Occupational Health Psychology*, *19*(1), 96–107. https://doi.org/10.1037/a0035062

Demerouti, E., Bakker, A. B., Nachreiner, F., & Schaufeli, W. B. (2001). The job demands-resources model of burnout. *Journal of Applied Psychology*, *86*(3), 499–512. https://doi.org/10.1037/0021-9010.86.3.499

Demerouti, E., Mostert, K., & Bakker, A. B. (2010). Burnout and work engagement: a thorough investigation of the independency of both constructs. *Journal of Occupational Health Psychology*, *15*(3), 209–222. https://doi.org/10.1037/a0019408

Dent, E. B., Higgins, M. E., & Wharff, D. M. (2005). Spirituality and leadership: An empirical review of definitions, distinctions, and embedded assumptions. *The Leadership Quarterly*, *16*(5), 625–653. https://doi.org/10.1016/j.leaqua.2005.07.002

Dépret, E., & Fiske, S. T. (1999). Perceiving the powerful: Intriguing individuals versus threatening groups. *Journal of Experimental Social Psychology*, *35*(5), 461–480. https://doi.org/10.1006/jesp.1999.1380

Eberly, M. B., Bluhm, D. J., Guarana, C., Avolio, B. J., & Hannah, S. T. (2017). Staying after the storm: How transformational leadership relates to follower turnover intentions in extreme contexts. *Journal of Vocational Behavior*, *102*, 72–85. https://doi.org/10.1016/j.jvb.2017.07.004

Elliot, A. J., & Reis, H. T. (2003). Attachment and exploration in adulthood. *Journal of Personality and Social Psychology*, *85*(2), 317–331. https://doi.org/10.1037/0022-3514.85.2.317

Etikan, I. (2016). Comparison of convenience sampling and purposive sampling. *American Journal of Theoretical and Applied Statistics*, *5*(1), 1. https://doi.org/10.11648/j.ajtas.20160501.11

Feldman, S. P. (2004). The culture of objectivity: Quantification, uncertainty, and the evaluation of risk at NASA. *Human Relations*, *57*(6), 691–718. https://doi.org/10.1177/0018726704044952

Fernando, M., & Jackson, B. (2006). The influence of religion-based workplace spirituality on business leaders' decision-making: An inter-faith study. *Journal of Management & Organization*, *12*(1), 23–39. https://doi.org/10.5172/jmo.2006.12.1.23

Fida, R., Paciello, M., Tramontano, C., Fontaine, R. G., Barbaranelli, C., & Farnese, M. L. (2015). An integrative approach to understanding counterproductive work behavior: The roles of stressors, negative emotions, and moral disengagement. *Journal of Business Ethics*, *130*(1), 131–144. https://doi.org/10.1007/s10551-014-2209-5

Ford, M. T., & Tetrick, L. E. (2011). Relations among occupational hazards, attitudes, and safety performance. *Journal of Occupational Health Psychology*, *16*(1), 48–66. https://doi.org/10.1037/a0021296

Fox, S., Spector, P. E., & Miles, D. (2001). Counterproductive work behavior (CWB) in response to job stressors and organizational justice: Some mediator and moderator tests for autonomy and emotions. *Journal of Vocational Behavior*, *59*(3), 291–309. https://doi.org/10.1006/jvbe.2001.1803

Fredrickson, B. L. (2001). The role of positive emotions in positive psychology: The broaden-and-build theory of positive emotions. *American Psychologist*, *56*(3), 218–226. https://doi.org/10.1037/0003-066X.56.3.218

Ganzin, M., Islam, G., & Suddaby, R. (2020). Spirituality and entrepreneurship: The role of magical thinking in future-oriented sensemaking. *Organization Studies*, *41*(1), 77–102. https://doi.org/10.1177/0170840618819035

Gardner, W. L., Avolio, B. J., Luthans, F., May, D. R., & Walumbwa, F. (2005). "Can you see the real me?" A self-based model of authentic leader and follower development. *The Leadership Quarterly*, *16*(3), 343–372. https://doi.org/10.1016/j.leaqua.2005.03.003

Gardner, W. L., Fischer, D., & Hunt, J. G. (2009). Emotional labor and leadership: A threat to authenticity? *The Leadership Quarterly*, *20*(3), 466–482. https://doi.org/10.1016/j.leaqua.2009.03.011

Gray, C. E., Merlo, K. L., Lawrence, R. C., Doaty, J., & Allen, T. D. (2023). Safety not guaranteed: Investigating employees' safety performance during a global pandemic. *Safety Science*, *158*, 105950. https://doi.org/10.1016/j.ssci.2022.105950

Gross, J. J. (2015). Emotion regulation: Current status and future prospects. *Psychological Inquiry*, *26*(1), 1–26. https://doi.org/10.1080/1047840X.2014.940781

Gruys, M. L., & Sackett, P. R. (2003). Investigating the dimensionality of counterproductive work behavior. *International Journal of Selection and Assessment*, *11*(1), 30–42. https://doi.org/10.1111/1468-2389.00224

Haldorai, K., Kim, W. G., Chang, H., & Li, J. (2020). Workplace spirituality as a mediator between ethical climate and workplace deviant behavior. *International Journal of Hospitality Management*, *86*, 102372. https://doi.org/10.1016/j.ijhm.2019.102372

Hällgren, M., Geiger, D., Rouleau, L., Sutcliffe, K. M., & Vaara, E. (2025). Organizing and strategizing in and for extreme contexts: Temporality, emotions, and embodiment. *Journal of Management Studies*, *62*(3), 1063–1086. https://doi.org/10.1111/joms.13201

Hällgren, M., Rouleau, L., & de Rond, M. (2018). A matter of life or death: How extreme context research matters for management and organization studies. *Academy of Management Annals*, *12*(1), 111–153. https://doi.org/10.5465/annals.2016.0017

Hannah, S. T., Uhl-Bien, M., Avolio, B. J., & Cavarretta, F. L. (2009). A framework for examining leadership in extreme contexts. *The Leadership Quarterly*, *20*(6), 897–919. https://doi.org/10.1016/j.leaqua.2009.09.006

Hartmann, S., Weiss, M., Newman, A., & Hoegl, M. (2020). Resilience in the workplace: A multilevel review and synthesis. *Applied Psychology*, *69*(3), 913–959. https://doi.org/10.1111/apps.12191

Hawkins, B. (2015). Ship-shape: Materializing leadership in the British Royal Navy. *Human Relations*, *68*(6), 951–971. https://doi.org/10.1177/0018726714563810

Hochwarter, W. A., Ferris, G. R., & Johnston Hanes, T. (2011). Multi-study packages in organizational science research. In D. Ketchen & D. Bergh (Eds.), *Building methodological bridges: Research methodology in strategy and management* (pp. 163–199). Emerald. https://doi.org/10.1108/S1479-8387(2011)0000006005

Hu, T., Zhang, D., & Wang, J. (2015). A meta-analysis of the trait resilience and mental health. *Personality and Individual Differences*, *76*, 18–27. https://doi.org/10.1016/j.paid.2014.11.039

Ilies, R., Morgeson, F. P., & Nahrgang, J. D. (2005). Authentic leadership and eudaemonic well-being: Understanding leader–follower outcomes. *The Leadership Quarterly*, *16*(3), 373–394. https://doi.org/10.1016/j.leaqua.2005.03.002

Javidan, M., & Dastmalchian, A. (2003). Culture and leadership in Iran: The land of individual achievers, strong family ties, and powerful elite. *Academy of Management Executive (1993–2005)*, *17*(4), 127–142. http://www.jstor.org/stable/4166016

Jermier, J. M., Gaines, J., & McIntosh, N. J. (1989). Reactions to physically dangerous work: A conceptual and empirical analysis. *Journal of Organizational Behavior*, *10*(1), 15–33. https://doi.org/10.1002/job.4030100103

Jiang, H., Jiang, X., Sun, P., & Li, X. (2020). Coping with workplace ostracism: the roles of emotional exhaustion and resilience in deviant behavior. *Management Decision*, *59*(2), 358–371. https://doi.org/10.1108/MD-06-2019-0848

Johns, G. (2006). The essential impact of context on organizational behavior. *Academy of Management Review*, *31*(2), 386–408. https://doi.org/10.5465/amr.2006.20208687

Jung, H. S., & Yoon, H. H. (2012). The effects of emotional intelligence on counterproductive work behaviors and organizational citizen behaviors among food and beverage employees in a deluxe hotel. *International Journal of Hospitality Management*, *31*(2), 369–378. https://doi.org/10.1016/j.ijhm.2011.06.008

Klotz, A. C., Swider, B. W., & Kwon, S. H. (2023). Back-translation practices in organizational research: Avoiding loss in translation. *Journal of Applied Psychology*, *108*(5), 699–727. https://doi.org/10.1037/apl0001050

Kuntz, J. R. C., Malinen, S., & Näswall, K. (2017). Employee resilience: Directions for resilience development. *Consulting Psychology Journal: Practice and Research*, *69*(3), 223–242. https://doi.org/10.1037/cpb0000097

Landman, A., Groen, E. L., van Paassen, M. M., Bronkhorst, A. W., & Mulder, M. (2017). Dealing with unexpected events on the flight deck: A conceptual model of startle and surprise. *Human Factors: The Journal of the Human Factors and Ergonomics Society*, *59*(8), 1161–1172. https://doi.org/10.1177/0018720817723428

Lazarus, R. S. (1991). *Emotion and adaptation*. Oxford University Press.

Lesener, T., Gusy, B., & Wolter, C. (2019). The job demands-resources model: A meta-analytic review of longitudinal studies. *Work & Stress*, *33*(1), 76–103. https://doi.org/10.1080/02678373.2018.1529065

Leuridan, G., & Demil, B. (2022). Exploring the dynamics of slack in extreme contexts: A practice-based view. *Human Relations*, *75*(6), 1167–1193. https://doi.org/10.1177/00187267211007786

Li, K. X., Yin, J., & Fan, L. (2014). Ship safety index. *Transportation Research Part A: Policy and Practice*, *66*, 75–87. https://doi.org/10.1016/j.tra.2014.04.016

Linden, D. V., Keijsers, G. P., Eling, P., & Schaijk, R. V. (2005). Work stress and attentional difficulties: An initial study on burnout and cognitive failures. *Work & Stress*, *19*(1), 23–36. https://doi.org/10.1080/02678370500065275

Madsen, P. M. (2009). These lives will not be lost in vain: Organizational learning from disaster in U.S. coal mining. *Organization Science*, *20*(5), 861–875. https://doi.org/10.1287/orsc.1080.0396

Madsen, P. M., & Desai, V. (2010). Failing to learn? The effects of failure and success on organizational learning in the global orbital launch vehicle industry. *Academy of Management Journal*, *53*(3), 451–476. https://doi.org/10.5465/amj.2010.51467631

Mäkikangas, A., Leiter, M. P., Kinnunen, U., & Feldt, T. (2021). Profiling development of burnout over eight years: relation with job demands and resources. *European Journal of Work and Organizational Psychology*, *30*(5), 720–731. https://doi.org/10.1080/1359432X.2020.1790651

Marcus, B., & Schuler, H. (2004). Antecedents of counterproductive behavior at work: A general perspective. *Journal of Applied Psychology*, *89*(4), 647–660. https://doi.org/10.1037/0021-9010.89.4.647

Marcus, B., Taylor, O. A., Hastings, S. E., Sturm, A., & Weigelt, O. (2016). The structure of counterproductive work behavior. *Journal of Management*, *42*(1), 203–233. https://doi.org/10.1177/0149206313503019

Marion, R., & Uhl-Bien, M. (2001). Leadership in complex organizations. *The Leadership Quarterly*, *12*(4), 389–418. https://doi.org/10.1016/S1048-9843(01)00092-3

Maslach, C., Schaufeli, W. B., & Leiter, M. P. (2001). Job burnout. *Annual Review of Psychology*, *52*(1), 397–422. https://doi.org/10.1146/annurev.psych.52.1.397

Melloy, R. C., Sayre, G. M., & Grandey, A. A. (2024). Emotion regulation during hostile interactions: Optimizing regulation profiles for event performance and well-being. *Journal of Management*. https://doi.org/10.1177/01492063241299400

Moore, C., & Gino, F. (2015). Approach, ability, aftermath: A psychological process framework of unethical behavior at work. *The Academy of Management Annals*, *9*(1), 235–289. https://doi.org/10.1080/19416520.2015.1011522

Nahrgang, J. D., Morgeson, F. P., & Hofmann, D. A. (2011). Safety at work: A meta-analytic investigation of the link between job demands, job resources, burnout, engagement, and safety outcomes. *Journal of Applied Psychology*, *96*(1), 71–94. https://doi.org/10.1037/a0021484

Nauman, S., Zheng, C., & Imam, H. (2023). Fake it or make it to stay? A case of Pakistani frontline emergency rescue workers. *International Journal of Human Resource Management*, *34*(4), 716–744. https://doi.org/10.1080/09585192.2022.2054286

Neider, L., & Schriesheim, C. (2011). The authentic leadership inventory (ALI): Development and empirical tests. *The Leadership Quarterly*, *22*, 1146–1164. https://doi.org/10.1016/j.leaqua.2011.09.008

Neubert, M. J., Kacmar, K. M., Carlson, D. S., Chonko, L. B., & Roberts, J. A. (2008). Regulatory focus as a mediator of the influence of initiating structure and servant leadership on employee behavior. *Journal of Applied Psychology*, *93*(6), 1220–1233. https://doi.org/10.1037/a0012695

Newman, A., Le, H., North-Samardzic, A., & Cohen, M. (2020). Moral disengagement at work: A review and research agenda. *Journal of Business Ethics*, *167*(3), 535–570. https://doi.org/10.1007/s10551-019-04173-0

Ng, K., & Yang, W. (2023). Feeling stuck and feeling bad: Career plateaus, negative emotions, and counterproductive work behaviors. *Human Resource Management Journal*, *34*, 921–941. https://doi.org/10.1111/1748-8583.12539

Obregon, S. L., Lopes, L. F. D., Kaczam, F., da Veiga, C. P., & da Silva, W. V. (2022). Religiosity, spirituality and work: A systematic literature review and research directions. *Journal of Business Ethics*, *179*(2), 573–595. https://doi.org/10.1007/s10551-021-04856-7

Ogbonnaya, C., Daniels, K., Messersmith, J., & Rofcanin, Y. (2023). A theory-based analysis of null causality between HRM practices and outcomes: Evidence from four-wave longitudinal data. *Journal of Management Studies*, *60*(6), 1448–1484. https://doi.org/10.1111/joms.12881

Ogunfowora, B., Nguyen, V. Q., Steel, P., & Hwang, C. C. (2022). A meta-analytic investigation of the antecedents, theoretical correlates, and consequences of moral disengagement at work. *Journal of Applied Psychology*, *107*(5), 746–775. https://doi.org/10.1037/apl0000912

Partouche-Sebban, J., Rezaee Vessal, S., Sorio, R., Castellano, S., Khelladi, I., & Orhan, M. A. (2021). How death anxiety influences coping strategies during the COVID-19 pandemic: Investigating the role of spirituality, national identity, lockdown and trust. *Journal of Marketing Management*, *37*(17–18), 1815–1839. https://doi.org/10.1080/0267257X.2021.2012232

Piff, P. K., Dietze, P., Feinberg, M., Stancato, D. M., & Keltner, D. (2015). Awe, the small self, and prosocial behavior. *Journal of Personality and Social Psychology*, *108*(6), 883–899. https://doi.org/10.1037/pspi0000018

Podsakoff, P. M., MacKenzie, S. B., Lee, J.-Y., & Podsakoff, N. P. (2003). Common method biases in behavioral research: A critical review of the literature and recommended remedies. *Journal of Applied Psychology*, *88*(5), 879–903. https://doi.org/10.1037/0021-9010.88.5.879

Porter, C. M., Woo, S. E., & Campion, M. A. (2016). Internal and external networking differentially predict turnover through job embeddedness and job offers. *Personnel Psychology*, *69*(3), 635–672. https://doi.org/10.1111/peps.12121

Robinson, S. L., & Greenberg, J. (1998). Employees behaving badly: Dimensions, determinants and dilemmas in the study of workplace deviance. In C. L. Cooper & D. M. Rousseau (Eds.), *Trends in organizational behavior* (pp. 1–30). John Wiley & Sons Ltd.

Robinson, S. L., & O'Leary-Kelly, A. M. (1998). Monkey see, monkey do: the influence of work groups on the antisocial behavior of employees. *Academy of Management Journal*, *41*(6), 658–672. https://doi.org/10.2307/256963

Ryan, R. M., & Deci, E. L. (2001). On happiness and human potentials: A review of research on hedonic and eudaimonic well-being. *Annual Review of Psychology*, *52*(1), 141–166. https://doi.org/10.1146/annurev.psych.52.1.141

Schaufeli, W. B. (2006). The balance of give and take: Toward a social exchange model of burnout. *Revue Internationale de Psychologie Sociale*, *19*(1), 75–119.

Searle, R. H., & Rice, C. (2025). Trust, and high control: An exploratory study of counterproductive work behaviour in a high security organization. *European Journal of Work and Organizational Psychology*, *34*(3), 392–402. https://doi.org/10.1080/1359432X.2024.2344870

Shamir, B., & Eilam, G. (2005). "What's your story?" A life-stories approach to authentic leadership development. *The Leadership Quarterly*, *16*(3), 395–417. https://doi.org/10.1016/j.leaqua.2005.03.005

Shepherd, D. A., & Williams, T. A. (2014). Local venturing as compassion organizing in the aftermath of a natural disaster: The role of localness and community in reducing suffering. *Journal of Management Studies*, *51*(6), 952–994. https://doi.org/10.1111/joms.12084

Sheppes, G., Scheibe, S., Suri, G., Radu, P., Blechert, J., & Gross, J. J. (2014). Emotion regulation choice: A conceptual framework and supporting evidence. *Journal of Experimental Psychology: General*, *143*(1), 163–181. https://doi.org/10.1037/a0030831

Sinclair, R., & Britt, T. W. (2013). *Building psychological resilience in military personnel*. American Psychological Association.

Sivakumar, S. (2022). A novel integrated risk management method for airport operations. *Journal of Air Transport Management*, *105*, 102296. https://doi.org/10.1016/j.jairtraman.2022.102296

Sonnentag, S., & Fritz, C. (2015). Recovery from job stress: The stressor-detachment model as an integrative framework. *Journal of Organizational Behavior*, *36*(S1), S72–S103. https://doi.org/10.1002/job.1924

Spector, P. E. (2011). The relationship of personality to counterproductive work behavior (CWB): An integration of perspectives. *Human Resource Management Review*, *21*(4), 342–352. https://doi.org/10.1016/j.hrmr.2010.10.002

Spector, P. E., & Fox, S. (2010). Counterproductive work behavior and organisational citizenship behavior: Are they opposite forms of active behavior? *Applied Psychology*, *59*(1), 21–39. https://doi.org/10.1111/j.1464-0597.2009.00414.x

Spector, P. E., Fox, S., Penney, L. M., Bruursema, K., Goh, A., & Kessler, S. (2006). The dimensionality of counterproductivity: Are all counterproductive behaviors created equal? *Journal of Vocational Behavior*, *68*(3), 446–460. https://doi.org/10.1016/j.jvb.2005.10.005

Steffensen, D. S., Mcallister, C. P., Perrewé, P. L., Wang, G., & Brooks, D. (2021). "You've got mail": A daily investigation of email demands on job tension and work-family conflict. *Journal of Business and Psychology*, *37*(2), 325–338. https://doi.org/10.1007/s10869-021-09748-1

Sumanth, J. J., Hannah, S. T., Herbst, K. C., & Thompson, R. L. (2024). Generating the moral agency to report peers' counterproductive work behavior in normal and extreme contexts: The generative roles of ethical leadership, moral potency, and psychological safety. *Journal of Business Ethics*, *195*, 653–680. https://doi.org/10.1007/s10551-024-05679-y

Sweeney, P. J., Thompson, V., & Blanton, H. (2009). Trust and influence in combat: an interdependence model. *Journal of Applied Social Psychology*, *39*(1), 235–264. https://doi.org/10.1111/j.1559-1816.2008.00437.x

Tomaka, J., Blascovich, J., Kelsey, R. M., & Leitten, C. L. (1993). Subjective, physiological, and behavioral effects of threat and challenge appraisal. *Journal of Personality and Social Psychology*, *65*(2), 248–260. https://doi.org/10.1037/0022-3514.65.2.248

Walumbwa, F. O., Avolio, B. J., Gardner, W. L., Wernsing, T. S., & Peterson, S. J. (2008). Authentic eadership: Development and validation of a theory-based measure†. *Journal of Management*, *34*(1), 89–126. https://doi.org/10.1177/0149206307308913

Wang, H., Sui, Y., Luthans, F., Wang, D., & Wu, Y. (2014). Impact of authentic leadership on performance: Role of followers' positive psychological capital and relational processes. *Journal of Organizational Behavior*, *35*(1), 5–21. https://doi.org/10.1002/job.1850

Whetten, D. A. (2009). An examination of the interface between context and theory applied to the study of Chinese organizations. *Management and Organization Review*, *5*(1), 29–56. https://doi.org/10.1111/j.1740-8784.2008.00132.x

Williams, L. J., Cote, J. A., & Buckley, M. R. (1989). Lack of method variance in self-reported affect and perceptions at work: Reality or artifact? *Journal of Applied Psychology*, *74*(3), 462–468. https://doi.org/10.1037/0021-9010.74.3.462

Williams, T. A., Gruber, D. A., Sutcliffe, K. M., Shepherd, D. A., & Zhao, E. Y. (2017). Organizational response to adversity: Fusing crisis management and resilience research streams. *Academy of Management Annals*, *11*(2), 733–769. https://doi.org/10.5465/annals.2015.0134

Wright, A. L., Meyer, A. D., Reay, T., & Staggs, J. (2021). Maintaining places of social inclusion: Ebola and the emergency department. *Administrative Science Quarterly*, *66*(1), 42–85. https://doi.org/10.1177/0001839220916401

Wright, T. A., & Cropanzano, R. (1998). Emotional exhaustion as a predictor of job performance and voluntary turnover. *Journal of Applied Psychology*, *83*(3), 486–493. https://doi.org/10.1037/0021-9010.83.3.486

Zaccaro, S. J., Rittman, A. L., & Marks, M. A. (2001). Team leadership. *The Leadership Quarterly*, *12*(4), 451–483. https://doi.org/10.1016/S1048-9843(01)00093-5

How to cite this article: Roodbari, H., Zheng, Y., Vatankhah, S., Woods, S., & Laker, B. (2025). Extreme context exposure and counterproductive work behaviour: The role of exhaustion, authentic leadership and spirituality. *Applied Psychology*, *74*(6), e70044. https://doi.org/10.1111/apps.70044