



The reciprocal relationship between safety behaviour and person-job fit: A self-regulation perspective

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ABSTRACT

Frontline work is defined by its safety criticality and is increasingly relied on by our economies and societies to maintain efficiency and performance. Despite the importance of these jobs, little is known about the factors that drive safety behaviours dynamically in safety critical environments, and how frontline workers shape their alignment with the core requirements of their job to execute such behaviours. In this paper, we build on self-regulation theory and employ a multilevel (i.e., between-person versus within-person) design to investigate reciprocal relationships between safety behaviours and person-job fit. Across a total sample of $n = 1139$ temporal data points for 86 (daily diary study) and 81 (weekly diary study) frontline police and nurse workers we find evidence for reverse causality (i.e., safety behaviours predicting person-job fit) at the within-person level. Furthermore, we find support for both normal (i.e., person-job fit predicting safety behaviours) and reverse causality at the between-person level of analysis. Overall, results across both levels illustrate how frontline workers self-regulate their safety behaviour and person-job fit within safety critical environments.

1. Introduction

The future of work is defined by a radically changing relationship between employees and their job (Brown et al., 2017; Lund et al., 2021). These changes are characterised by a shift away from stable long-term employment, the rise of automation and associated job loss, and increased pressure on employees to reskill to meet the demands of future employment needs (Brown et al., 2017). These disruption trends have accelerated across the ongoing COVID-19 health crisis and been epitomised by large net increases in turnover (termed the ‘Great Resignation’) (Fuller & Kerr, 2022). Recent work highlights the inequitable nature of these disruptions, with professions involving predominantly physical and manual skills being associated with the lowest wages and greatest instability (Lund et al., 2021). Given the forecasted increases in occupation shifts to physically demanding roles (e.g., health care and community-based work) (Lund et al., 2021), and recent research linking such cyclical economic changes with increased risk of injury (Jenke et al., 2021), the physical relationship employees have with their work is of significant importance.

This paper focuses on employees in emergency and community-

based frontline industries (i.e., specifically police and nurses), and examines the relationships these employees have with their job and workplace. Workers in frontline roles, defined as those who are “involved in the delivery of essential goods and services” (OECD, 2022, p. 5), carry out their tasks in predominantly physical environments, and have direct physical contact with other people (OECD, 2022). Frontline professions are defined by their safety criticality and are increasingly relied on by our economies and societies to maintain efficiency and performance (Dai et al., 2021; Koziarski, 2021). However, the recent crises have exacerbated many outstanding long-term issues faced by these professions. For example, frontline workers experience the highest rates of financial instability, health complaints, safety concerns, and job instability of all professions (OECD, 2022). Furthermore, frontline workers are the most likely to be involved in work-related critical incidents, with such risks linked to pervasive negative emotional states and burnout (Bacharach & Bamberger, 2007; Monnier et al., 2002). These systemic issues, expounded by recent crises, have also added further causes of employee burnout (Sumner & Kinsella, 2021) and increased demand for intensive workplace interventions to ameliorate employee strain (Liu et al., 2021). Concerningly, while a great deal of

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research has demonstrated the important role of promoting job resources and mitigating demands on such strain outcomes (Demerouti et al., 2001; Häusser et al., 2010), there is emerging evidence that many situational and role-based demands frontline workers experience cannot be buffered with available workplace initiatives and job resources alone (Flatau-Harrison et al., 2022; LaDonna et al., 2022). Indeed, these demands can be considered as systemic stressors innate to these particular roles and professions (Broetje et al., 2020; Kelly et al., 2015; Sorenson et al., 2016). Consequently, a high burden of responsibility for shaping the relationship a frontline worker has with their work falls on the employee themselves. This, in turn, begs the question as to how these frontline workers maintain adequate person-job fit over time.

Another key concern in these highly demanding and uncertain environments is how individuals can be supported to maintain job effectiveness and sustain the high required level of safety behaviours that are characteristic of the role, akin to longer-term endurance (Cham et al., 2021). To address this, we require a better understanding of how safety-behaviours fluctuate over time. In recent years, research on organisational behaviour has converged on the insight that many behaviours carried out within organisation, including task performance (Dalal et al., 2020) and organisational citizenship behaviour (OCB) (Dalal et al., 2009), are best examined as dynamic and variable state-traits (Olenick & Dishop, 2022). However, unlike many work-relevant behaviours that have localised impact (e.g., OCB) — a single momentary decrease in safety behaviours can have far-reaching and long-lasting detrimental consequences for the organisation, the community beneficiaries (Agnew et al., 2013), and the workforce's health and safety (Neal & Griffin, 2006). The reason for this is clear: safety behaviour is often the immediate temporal precursor to injury and safety-breaches (Beus et al., 2015; Christian et al., 2009; Clarke, 2012), particularly for frontline workers. A crucial question is what safety behaviours do frontline workers employ to respond to manifest threats in their environment and how does this influence their perception of person-job fit?

In this paper, we call attention to the role of person-job fit in a safety critical work environment. Specifically, we argue that employees' evolving perceptions of person-job fit can be thought of as an idiosyncratic sensemaking process based on relevant work behaviours and experienced (Vleugels et al., 2018), whilst safety behaviours are a direct behavioural response to the same experienced work environment. We show how reconceptualising the relationships between these constructs as reciprocal in nature provides a valuable account for why these variables may exhibit within-person temporal dynamics. Subsequently, our empirical focus is on the extent to which person-job fit and behavioural responses to the safety context are inter-related across time in frontline contexts. To do so we test the dynamic temporal relationships between multiple facets of both safety behaviour and person-job fit in a sample of frontline workers in safety-critical work environments.

Empirically, this work examines how person-job fit shapes safety-behaviour (i.e., regular causative pathway) as well the inversed case of how behavioural responses to the safety critical work environment may shape person-job fit (i.e., reverse causative pathway). The dynamics of these relationships are investigated across two distinct diary study timeframes (day-to-day and week-to-week) in an effort to produce a fine-grained understanding of how these processes unfold (Olenick & Dishop, 2022). We draw from self-regulation theory (Lord et al., 2010) to explain the mechanism that drives these relationships across time and between employees. In the following section, we explicate our theorising on the importance of considering safety behaviours and person job fit in tumultuous work environments faced by frontline employees, and we detail why theorising about self-regulation is particularly relevant when considering temporal dynamics between both constructs.

2. Safety behaviour: A temporal perspective

Considering safety behaviour from a dynamic perspective implies that safety-behaviour can be seen as an adaptive response to changing

environmental workplace threats. More generally, this perspective stipulates the environment or surroundings (i.e., physical artefacts and objects contained within) directly influence the fluctuations of goal-directed behaviour (Cornelissen et al., 2014). In uncertain and high-risk work environments, employees directly engage with safety instruments and procedures to alleviate critical incidents and workplace threats. For example, an employee may need to ensure they are wearing personal protective equipment (PPE) or adhere to the physical limitations of tools and equipment to minimise the potential of physical threats. The behavioural responses to these environmental materialisations are typically conceptualised in safety research as the extent to which employees carry out *safety compliance* behaviours and *safety participation* behaviours (Griffin & Neal, 2000; Neal & Griffin, 2006). *Safety compliance* refers to basic standards of safe work practice, including adherence to core work requirements and use of PPE. Meanwhile, *safety participation* refers to behaviours over and above requirements directly contributing to personal safety, but which cultivate a safe environment. In this way, compliance behaviours can be thought of as reactive responses to an uncertain environment, whereas participation behaviours can be considered behaviours employees take to actively bring certainty to their environment. Collectively, meta-analyses have demonstrated that the mutual contribution of these safety behaviours is a direct precursor to injury and accident risk (Christian et al., 2009; Clarke, 2010).

Despite its crucial importance to the health and well-being of both employees and organisations, we lack an understanding of the factors that drive within-person safety behaviour. Several research groups have noted the need for temporal accounts of safety behaviour (Beus et al., 2016; Beus & Taylor, 2018; Griep & Hansen, 2020), and in particular, for dynamic self-regulatory models that can help explain how individual employees manage their own safety behaviour over time (Casey et al., 2017). However, only a few recent studies (Olsen et al., 2021; Tholén et al., 2013) have examined the dynamic within-person processes underlying safety behaviour, with research in frontline contexts only examining broad changes across significantly longer timescales (e.g., months to years) (Halbesleben et al., 2013; Neal & Griffin, 2006). While such approaches are useful for understanding long-term organisational changes, they cannot account for the more immediate fluctuations in safety behaviours that manifest in response to evolving safety threats. Furthermore, no research exists to the author's knowledge examining how the execution of safety behaviours influences subsequent alignment with the broader task environment. Indeed, limited previous research has examined the relationship between person-environment fit constructs, such as person-job fit, and safety behaviour, with most research exclusively focused on the downstream impact of fit on safety outcomes (Sherry, 1991; Wang et al., 2021). In the following section we outline the rationale for also considering safety behaviour from a dynamic perspective including its impact on subsequent person-job fit.

Examining safety behaviour from a temporally dynamic perspective is advantageous for at least two key theoretical reasons. Firstly, this approach accounts for the idea that employee behaviour is a function of the complex, socio-technical system in which employees operate (Foster et al., 2019). A complex system can be understood as a system of many components which may interact with one another. In complex systems, human behaviour is intrinsically difficult to model due to existing dependencies and conflicting relationships between these various components, or between a given system and its broader environment (Hudson, 2010; Macrae, 2019). Complex systems are usually thought of as having distinct properties that arise from these relationships, such as nonlinearity, feedback loops, adaptation, emergence, or spontaneous order. For instance, in circumstances where the environment presents threats of increased risk, employees may shift their behaviour to minimise the expectancy gap between their desired safety-state by engaging in higher-than-normal safety compliance. However, it may be that safety compliance is insufficient to meet the desired response to the context. For instance, in circumstances where perceived threats increase, but the

dynamics of these threats are contingent on exogenous social actors (i.e., co-workers) or situational contexts (e.g., pandemic), employees may need to engage in safety participation to actively shape the socio-technical environment and proactively adapt to threats. A dynamic perspective of these behaviours places the socio-technical environment as a key catalyst for such ongoing adaptive safety responses. The second major advantage of considering safety-behaviour from a temporally dynamic perspective is that it provides a natural and intrinsic account for frontline work environments which are defined by high operational uncertainty and rapidly changing task demands. This acknowledges that such work contexts include environmental threats which evolve and change over time. Thus, to the extent that threats fluctuate, the resulting safety behaviours should adapt accordingly.

2.1. Person-job fit as a self-regulatory process

One of the most studied types of person-environment (PE) fit is the compatibility of individuals with their jobs (Kristof-Brown et al., 2005; Kristof, 1996). Following Edwards (1991), *person-job fit* comprises two distinct components: the match between the abilities of a person and the demands of a job (*demands-abilities fit*), and the match between the needs and desires of a person with the attributes of a job (*needs-supplies fit*). Research has demonstrated that demands-abilities and needs-supplies fit are conceptually distinct categories of fit within the broader person-job fit construct (Cable & DeRue, 2002). According to Kristof (1996), a “job” should be understood as the tasks a person is expected to accomplish in exchange for employment, in addition to the characteristics of those tasks, and therefore person-job fit should be judged relative to one’s job attributes and task requirements. PE fit theory stipulates that PE fit will result in positive effects on individuals’ attitudes, cognitions, and well-being, including lower intention to leave the organisation, higher job satisfaction and commitment, and reduced stress (De Cooman & Vleugels, 2022; Kristof-Brown et al., 2005). Relative to other types of fit (e.g., person-organisation fit), person-job fit is a strong predictor of job- and career-focused outcomes (e.g., job and career satisfaction, commitment, job performance) (Cable & DeRue, 2002; Greguras & Diefendorff, 2009; Vogel & Feldman, 2009), making it a prime construct to investigate when studying relationships with safety compliance and safety participation behaviours.

In this paper, we propose that frontline workers’ perceptions of their person-job fit dynamically relate to their safety behaviour over time. Perceived fit reflects a psychological approach to fit and captures the extent to which someone experiences fit with a specific organisation or job at a particular moment in time (De Cooman & Vleugels, 2022). A recent review of the temporal fit literature reveals that person-job fit exhibits large fluctuations on the within-person level, both on a day-to-day and week-to-week basis (Vleugels et al., 2023). Fit researchers (Gabriel et al., 2014; Tims et al., 2016; Vleugels et al., 2018) have just begun to speculate why person-job fit, and employees’ perception thereof, is prone to fluctuate within-individuals over time. Most notably, research has linked dynamic fluctuations in person-job fit to self-regulatory models of affect and behaviour (Gabriel et al., 2014; Vleugels et al., 2018). Self-regulation refers to the capability for individuals “to alter the self’s responses to achieve a desired state or outcome that otherwise would not arise naturally”, particularly in relation to the pursuit of goals (Schmeichel & Baumeister, 2004). Here, goals refer to desired conditions that ascribe meaning to behaviour and guide the allocation of personal time and effort (Carver & Scheier, 1998), and function as specific targets driving behaviour via regulatory processes (Ballard et al., 2022).

Much like a self-regulatory process, fit researchers (Johnson et al., 2013; Yu, 2013) have suggested that managing fit across time is an innately desirable goal because it satisfies evolutionary needs for competence, belongingness and autonomy (Greguras & Diefendorff, 2009), resulting in beneficial effects on job stress, well-being, and overall adjustment (Edwards & Shipp, 2007; French et al., 1982).

Indeed, Yu (2009, 2013) proposed that affective self-regulation can be considered the driving mechanism underpinning temporal changes in fit, either because people try to achieve consistency between their experienced work-based affect and their experienced level of fit (affective consistency perspective), or because they see fit as a tool to be managed in search of well-being (hedonistic perspective). This work suggests that managing person-job fit requires self-regulation (Johnson et al., 2013; Yu, 2013) because perceptions of person-job fit develop in response to experienced discrepancies between “ideal conditions and experienced conditions” (Johnson et al., 2013). Specifically, individuals endeavour to increase the alignment between the perceived characteristics of the work environment (e.g., job demands, task requirements, work inducements) and their personal characteristics (i.e., competence, skills, needs) and ideal work standards, thereby reducing discrepancies between both (Johnson et al., 2013). In the following section we explain why the relationship between person-job fit and safety behaviour may unfold in line with a self-regulation theory perspective. We use this account to explicate our model of both normal and reverse causation with safety-behaviour in detail below.

2.2. Self-regulatory feedback loops and reciprocal causality

The above arguments about temporal fluctuations in person-job fit indicate that experiencing person-job fit can be considered a special case of goal attainment in that individuals may seek to manage, on an ongoing basis, their own safety behaviour in order to achieve an optimal state of fit. However, and as per the key tenets of self-regulation theory (Lord et al., 2010), this process of goal attainment unfolds within a network of reciprocally interacting influences. Indeed, previous research in management that has built on self-regulatory theory to explain the direction of behaviour towards goal performance has demonstrated that efforts to reduce discrepancies between present states and the desired states in goal attainment, such as in learning (Hardy et al., 2019), are also influenced by corrective feedback in the form of negative feedback loops. In this way, reciprocal relationships between motivation and behaviour feature a positive pathway from motivation to behaviour, and a negative pathway from behaviour to motivation as the system gradually reduces investment and resources from the pursuit of a goal which is near completion.

By contrast, some authors have also argued for the presence of positive feedback loops as discrepancy enlarging systems (Carver, 2006; Lord et al., 2010) in which inter-related behavioural-motivational states accelerate over time to increase the distance between the actor and the salient *anti-goals* in the immediate environment (Carver, 2006). We argue that in work defined by safety criticality, workers may have salient goals related to *avoiding* injury and accident, and these goals are subject to an accelerating positive feedback loop. This mechanism would manifest as reciprocal effects between person-job fit and safety behaviour. Accelerating positive feedback loops systems are likely to reinforce the link between job alignment and the capability to carry out safety behaviours over time, and a discrepancy enlarging process will produce a subsequent positive reciprocal effect to further enhance the distance from the undesired accident/injury. Although such feedback loops are part of a much broader set of processes and systems beyond the scope of this paper, and indeed injury represents a distal environmental threat not directly measured in this paper, we narrow our focus down to an examination of the reciprocal person related behaviour and cognition processes as other authors have done (Hardy et al., 2019) to validate the first component of the proposed discrepancy enlarging system. The following sections detail why we would expect to see reciprocal positive pathways of causality as predicted by the above theorising.

3. Normal causative pathway: Person-job fit → safety behaviour via self-regulation

The first critical empirical question we examine is the extent to

which person-job fit may influence subsequent safety behaviours. In a safety context, safety compliance and participation behaviour can be conceptualised as salient behavioural responses that require self-regulation to achieve. Within the fit literature, the dominant research paradigm suggests a normal causative relationship in which better fit is the precursor to a range of behavioural and affective outcomes (Vleugels et al., 2023). The traditional, normal causation perspective on PE fit holds that individuals can only experience person-job fit in the absence of (perceived) discrepancies between abilities and needs, and work demands and job supplies (French et al., 1982; van Harrison, 1978; Kristof, 1996). This view implies that temporal changes in behaviour, such as safety compliance and participation, are a causal outcome of changes in perceived person-job fit (Vleugels et al., 2018). Applied to a temporal self-regulation framework, PE fit scholars (Yu, 2013) maintain that individuals are motivated to situationally self-regulate (i.e. minimise) experienced discrepancies between personal attributes and job attributes. Self-regulation theory (Carver & Scheier, 1998) further predicts that a perceived decrease in person-job discrepancies will positively influence work outcomes (Gabriel et al., 2014; Johnson et al., 2013; Vleugels et al., 2018). In contrast, poor self-regulation (in relation to fit) has been linked with poor perceived fit and, consequently, poor work outcomes such as counterproductive work behaviours (Ilescu et al., 2015).

In addition to the above, and in relation to discrepancy enlarging systems, the theoretical rationale is that suboptimal experiences of person-job fit may result in deleterious outcomes in a safety context. These might be considered instances of self-regulation failure, which occurs when undesirable outcomes result from intentional changes to behaviours which fail either due to insufficient effort (termed under-regulation) or ineffective behaviours (termed mis-regulation) (Heatherton & Baumeister, 1996). Accounts of self-regulatory failure suggest that self-regulation is subject to a limited strength model (Schmeichel & Baumeister, 2004). Accordingly, individuals have a “limited supply of willpower that is dedicated to acts of self-control”, with each “act of self-control draw[ing] from this limited supply, leaving less available for subsequent acts that require self-regulation or the self’s active intervention” (Schmeichel & Baumeister, 2004). In instances where there is a poor alignment between an employee and their job, they may spend more of their self-control on carrying out basic functions and be more likely to neglect safety procedures and practices due to self-regulatory failure. Essentially, regulatory failures in maintaining fit will result in a poorer ability to reduce the perceived discrepancies. In contexts where the environment poses uncertainties or challenges that are incongruent with the employee’s personal demands or needs, the individual is likely to perceive their person-job fit as poor, denoting a situation of self-regulatory failure.

Thus, based on the reasoning that employees who experience high levels of person-job fit likely have a greater capacity to: (1) resist self-regulatory failure, and (2) utilise such capacity for responding to evolving threats, we argue that person-job fit is likely to act as a predictor of safety behaviour. Accordingly, and in line with previous research (Wang et al., 2021), given that fit itself is driven by self-regulation and likely to rely on available self-regulatory resources, we propose that in instances where experienced person-job fit is poor, employees are more likely to encounter self-regulatory failure and resource depletion, and therefore will execute requisite safety behaviours less effectively. This is particularly likely with safety participation which is an extra-role behaviour that requires additional cognitive or physical resources to execute, over and above core safety requirements. Conversely, those who experience high levels of person-job fit will have greater self-regulatory resources to engage in core and proactive safety behaviours. Therefore, we predict the following:

Hypothesis 1a. *Needs-supply (N-S) fit positively predicts safety compliance and participation behaviour.*

Hypothesis 1b. *Demands-ability (D-A) fit positively predicts safety*

compliance and participation behaviour.

4. Reverse causative pathway: Safety behaviour → person-job fit

The second core empirical question we examine is the extent to which safety behaviours may manifest a causal reciprocity with person-job fit. In the prior sections, we argued that the safety critical environment in which employees operate, and the job stressors and uncertainty associated with such environments, can cause a responsive change in safety behaviours. That is, individuals adapt to and reshape the level of threat in their environment by increasing their relative safety behaviours. Here, we argue that as employees carry out these behaviours within the work context, they become more embedded in their roles as they are provided opportunities to carry out task actions that embody the core requirements of the role. Thus, the possible variation in safety behaviour induced from the uncertain and threatening situational contexts of frontline work may trigger opportunities for the individuals to perceive higher person-job fit. Given that poor working conditions and high threat environments may reduce employees’ perceived job fit, and that people are inherently motivated to maintain a strong sense of fit with their environment over time (Yu, 2009, 2013), engaging in safety compliance and safety behaviours can be considered part of a larger self-regulation cycle with the sole purpose of maintaining optimal person-job fit over time.

This theoretical rationale speaks to the basic tenets of self-regulation theory which suggest that in the process of setting and aspiring for goals, individuals may modify behaviour by increasing or decreasing effort if a discrepancy is detected between a goal and their current progress in achieving it (Lord et al., 2010). This reverse-causation perspective is theoretically important for approaches challenging the conventional normal causation perspective of person-job fit. Indeed, prior empirical research has established that this normal causation perspective is not always as common as typically implied (Vleugels et al., 2023) and fit scholars (Bayl-Smith & Griffin, 2018; Bayl-Smith & Griffin, 2017; De Beer et al., 2016; Vleugels et al., 2018) have argued that reverse causative relationships exist such that employees adapt their attitudes and behaviours to improve their sense of person-job fit.

In summary, we propose that employees’ safety behaviour in safety critical contexts is likely driven by particularly salient perceptions of risk within their respective environment. Accordingly, employees can be expected to engage in relevant safety behaviours with the purpose of (a) avoiding negative safety outcomes and, in doing so, (b) safeguarding optimal levels of person-job fit. To the extent that engaging in relevant safety behaviours does not exceed employees’ self-regulatory capacity, it would be expected that engaging in said behaviours fosters perceptions of person-job fit because they provide an opportunity for role embeddedness by increasing employees’ understanding of key safety requirements and because these behaviours prove to be instrumental in fulfilling personal safety needs. Conversely, *reductions* in safety behaviours should result in fewer opportunities for role embeddedness and make it less likely that employees internalise safety requirements or that safety needs are being fulfilled, both of which indicate suboptimal person-job fit. In sum, from a self-regulation perspective, the above would suggest a dynamic process whereby safety behaviours are used instrumentally to manage and improve person-job fit. As such, we hypothesise the following reverse causation hypotheses:

Hypothesis 2a. *Safety compliance and participation behaviour positively predict needs-supply (N-S) fit.*

Hypothesis 2b. *Safety compliance and participation behaviour positively predict demands-abilities (D-A) fit.*

5. Dynamic Self-Regulation: Temporal drivers of causative processes

Important to any understanding of applied examples of self-

regulation theory is the recognition that self-regulation “occurs at various levels of abstraction” and “inversely relates to the cycle times of feedback loops associated with that level” (Lord et al., 2010, p. 547). Self-regulation theory suggests that in pursuit of more abstract goals individuals may undergo cycle lengths of greater magnitude (e.g., months, years) at a high level of abstraction, whereas for more finite goals individuals may undergo much more rapid cycle lengths (e.g., hours, days) at an intermediate level of abstraction (Lord et al., 2010). The focus on self-regulation theory in the current paper therefore necessitates the use of multiple time frames and levels of analysis given the use of referent conditions such as person-job fit and safety behaviour which may have low, intermediate, or even high cycle levels. Such theoretical considerations therefore necessitate the use of research designs “that capture within-person data from multiple assessments” (Lord et al., 2010, p. 560) including the examination of “one’s self-regulatory processes ...adjust[ing] around a trend or baseline, with deviations above or below this baseline lessening (or in some cases, amplifying) over time” (Lord et al., 2010, p.561). Given this complex context in which self-regulatory theory applies to goals we included multiple time frames of analysis to capture both high and intermediate cycle levels (i.e., daily, and weekly measures), and contrast effects observed within-person from aggregated between-person to assess the degree to which trends around baseline measures are observable. Accordingly, and on an exploratory basis, we also address the following research questions:

Research Question 1: do similar causative pathways between person-job fit and safety behaviour exist across shorter (i.e., daily) or longer (i.e., weekly) time frames of analysis?

Research Question 2: do similar causative pathways between safety behaviour and person-job fit exist at within-person and between-person, levels of analysis?

6. Methods

6.1. Sample and procedure

Participants from frontline roles were recruited using Prolific and MTurk, across two consecutive data collection initiatives. In total, 56 nurses and 36 police officers were recruited across both platforms (Prolific: nurses = 17, police officers = 33, MTurk: nurses = 39, police officers = 3). We used a repeated measures design across both daily and weekly time frames, in which participants were asked to complete a short survey assessing their experiences on the job in the past day or past week. Across the length of the study, participants received a total reimbursement of \$100 USD in MTurk and £75 in Prolific. The sequence of surveying was as follows. Firstly, participants completed a baseline measure of their experiences of safety at work. One to two weeks after completion of the baseline measure, participants completed a daily diary study across 14 consecutive days, responding to measures of person-job fit, safety behaviour and a range of other workplace constructs. Following completion of the last daily diary study data point, for 8 consecutive weeks participants completed a weekly diary study. Finally, participants completed an exit baseline measure in the week after their final weekly diary study, which is not used in the current paper. Across all measurement time points, the study design spanned 12 consecutive weeks. Response rate for the daily study was 87%, with an average of 7 days worked across 14 days for the whole sample. Response rate for the weekly study was 90% with an average of 4 days worked per week across 8 weeks for the whole sample.

For the purposes of analysis, FIML was used to accommodate missing data in the CLPM models. This resulted in the inclusion of 86 participants (n = 36 police officers, n = 50 nurses) for daily diary study analyses (n = 592 data points) and 81 participants (n = 36 police officers, n = 45 nurses) for weekly diary study analyses (n = 547 data points). The weekly surveys featured a 99% overlap in participants with the daily surveys. This is a clear strength compared to previous research using

similar multilevel designs that typically do not include overlap between the samples across different time lags, which thus creates a confound when comparing effects across time frames (Vleugels et al., 2018). Stated differently, the current approach with participant overlap across time lags allows us to make strong causal inference on the influence of temporality to the hypotheses tested.

6.2. Measures

All measures listed below were included in baseline, daily and weekly data, and all analyses conducted using the same items. The use of short measures of constructs is a common approach in diary study designs (Vleugels et al., 2018), and the use of matching items across levels necessary when inspecting analytic models for evidence of homology. Participants were asked to reflect on their experiences at work, with daily and weekly items prefaced by statements reflecting the lag of interest (i.e., “thinking about your work over the last week”).

Demands-Abilities (DA) fit. We measured demands-abilities fit with 2 items from Cable and DeRue (2002) on a 5-point Likert scale (1 = Strongly Disagree-5 = Strongly Agree), assessing the degree to which employee’s believed there was a good match between their skills with the requirements of their role. A sample item is “My abilities and training were a good fit with the requirements of my job”. These items were aggregated for all analyses reported in the paper.

Needs-Supply (NS) fit. We measured needs-supply fit with 2 items from Cable and DeRue (2002) on a 5-point Likert scale (1 = Strongly Disagree-5 = Strongly Agree), assessing the degree to which employee’s believed there was a good match between their job needs and their current role. A sample item is “My job gave me just about everything that I want from a job”. These items were aggregated for all analyses reported in the paper.

Safety compliance. We used two items from Neal and Griffin (2006) on a 5-point Likert scale (1 = Strongly Disagree-5 = Strongly Agree) assessing the degree to which employees had complied with the core safety requirements of their job. A sample item is “I used the correct safety procedures for carrying out my job this week”. These items were aggregated for all analyses reported in the paper.

Safety participation. We used two items from Neal and Griffin (2006) on a 5-point Likert scale (1 = Strongly Disagree-5 = Strongly Agree) assessing the degree to which employees had facilitated extra-role safety behaviours in their job which went over and above core requirements. A sample item is “I put in extra effort to improve the safety of the workplace this week”. These items were aggregated for all analyses reported in the paper.

6.3. Analytical approach

ICC (1) values for each of the dependent variables in the daily data were as follows: DA Fit (0.64), NS Fit (0.77), Safety Compliance (0.42), Safety Participation (0.65). ICC (1) values for each of the dependent variables in the weekly data were as follows: DA Fit (0.61), NS Fit (0.79), Safety Compliance (0.50), Safety Participation (0.65). All values were in acceptable ranges compared to past research (Cho & Kim, 2022) and support the validity of analysing at the within-person level. Thus, to test Hypotheses 1 and 2, a multilevel within- and between-person cross-lagged panel model (CLPM) was specified simultaneously for both daily and weekly data using a Maximum Likelihood estimator in Mplus, robust to non-normality and non-independence of data. This involved creating lagged variables for each construct (lag = 1), representing the reported value of each construct at the previous time point of measure. All lagged within-person variables were person-mean centred, whilst the baseline between-person variables were grand mean centred. The majority of participants reported within-person variation across all constructs, ranging from a minimum of 67% for DA Fit in the daily data to 86% for Safety Participation in the daily data.

Four CLPM models were tested per focal relationship, representing

tests of the causal order between NS Fit and Safety Participation, DA Fit and Safety Participation, NS Fit and Safety Compliance and DA Fit and Safety Compliance. This involved regressing the lagged variables of interest on the subsequent observations of the respective outcome measures (i.e., cross lag), while simultaneously estimating covariances for the concurrent and autoregressive effects. Previous research has demonstrated that the use of CLPM is a strong analytical approach for understanding the causal order between variables of interest in dynamic self-regulatory frameworks (Hardy et al., 2019). Baseline measures of each construct were used to test the hypotheses regarding between-level temporal effects, and these variables were regressed on the latent between level manifestations of the weekly/daily variables respectively.

7. Results

Table 1 displays the within-person correlation matrix for the variables included in the present study in the daily data, with reported between-person means, standard deviations, and between-person correlations on the diagonal. Table 2 displays the same, but for the weekly data. Upon inspection of daily repeated measures correlations in Table 1 we can see preliminary evidence of a significant concurrent associations between DA Fit and Safety Compliance, but not DA Fit and Safety Participation, NS Fit and Safety Compliance, nor NS Fit and Safety Participation. From inspection of weekly repeated measures correlations in Table 2 we can see preliminary evidence of a significant concurrent association between DA Fit and Safety Compliance, DA Fit and Safety Participation, and NS Fit and Safety Participation. No significant concurrent association was observed between NS Fit and Safety Compliance.

Following specification of the CLPM for the four core models of interest, lagged and concurrent pathways were inspected for significance in both the daily and weekly data samples across both levels of analysis. Partial support for Hypothesis 1a was found on the between-person level, but not the within-person level. Specifically, baseline between-person needs-supply (NS) fit predicted subsequent between-person daily safety participation in the daily data ($\beta = 0.16, p < .05$) (Fig. 2). This finding was replicated in the weekly data, with baseline between-person NS fit predicting subsequent between-person weekly safety participation ($\beta = 0.16, p < .05$) (Fig. 8). Baseline NS fit did not predict higher levels of daily ($\beta = 0.05, p = .24$) or weekly ($\beta = 0.00, p = .96$) safety compliance, and on the within-person level previous NS fit did not predict higher levels of next day ($\beta = 0.14, p = .17$) or next week ($\beta = -0.04, p = .58$) safety participation. Similarly, on the within-person level previous NS fit did not predict higher levels of next day ($\beta = 0.05, p = .25$) or next week ($\beta = 0.03, p = .57$) safety compliance. These findings indicate that frontline workers with higher levels of NS fit were more likely to report higher average levels of both daily and weekly safety participation behaviours relative to frontline workers with lower levels of NS fit.

Partial support for Hypothesis 1b was found on the between-person

level, but not the within level. Baseline between-person demands-abilities (DA) fit predicted subsequent between average safety compliance in the daily data ($\beta = 0.12, p < .05$) (Fig. 3). However, no support was found on the within-person level. Baseline DA fit did not predict higher average levels of daily ($\beta = 0.06, p = .57$) or weekly ($\beta = 0.17, p = .09$) safety participation. Lagged DA fit also did not predict higher levels of next day ($\beta = -0.08, p = .49$) or next week ($\beta = -0.05, p = .50$) safety participation. Finally, lagged DA fit did not predict higher levels of next day ($\beta = 0.05, p = .58$) or next week ($\beta = -0.07, p = .24$) safety compliance. These findings indicate that frontline workers with higher levels of DA fit were more likely to report higher average levels of both daily and weekly safety compliance behaviours compared to those reporting lower levels of DA fit, but the temporal process was not short-term.

Partial support for Hypothesis 2a was found on the between-person level, but not the within-person level. Specifically, baseline between-person safety compliance significantly predicted subsequent average daily DA fit ($\beta = 0.21, p < .05$) (Fig. 3). This finding was replicated in the weekly data, with baseline between-person safety compliance significantly predicting subsequent average weekly DA fit ($\beta = 0.24, p < .05$) (Fig. 5). This result, combined with the support for Hypothesis 1b in which we found that between-person DA Fit predicted safety compliance, suggests the presence of a reciprocal effect. Baseline safety participation did not significantly predict subsequent average daily ($\beta = 0.01, p = .88$) or weekly ($\beta = 0.06, p = .30$) DA fit. Lagged safety participation did not significantly predict next day ($\beta = 0.00, p = .97$) or weekly ($\beta = 0.13, p = .06$) DA fit. Similarly, lagged safety compliance did not significantly predict next day ($\beta = 0.02, p = .64$) or weekly ($\beta = 0.09, p = .39$) DA fit. These findings indicate that frontline workers who reported a higher tendency to engage in safety compliance behaviours were more likely to report higher average levels of DA in the subsequent daily and weekly time periods.

Finally, partial support was found for Hypothesis 2b on the within-person level, but not the between-person level. Lagged weekly within-person safety participation predicted next week NS fit ($\beta = 0.12, p < .05$) (Fig. 8). Baseline safety participation did not predict subsequent average daily ($\beta = 0.05, p = .42$) or weekly ($\beta = 0.08, p = .41$) NS fit, and similarly baseline safety compliance did not predict subsequent average daily ($\beta = 0.12, p = .25$) or weekly ($\beta = 0.10, p = .57$) NS fit. Lagged safety compliance did not predict next day ($\beta = 0.04, p = .52$) or weekly ($\beta = -0.02, p = .85$) NS fit, and lagged safety participation did not predict next day NS fit ($\beta = -0.01, p = .90$). These findings indicate that when frontline workers engage in higher levels of safety participation behaviours in one particular week, they experience a boost in NS fit the following week.

In sum, and with reference to the research questions explored, we found that although there were differences within-person across temporal frames of analysis (i.e., daily vs. weekly time frame; Research Question 1), there were some similarities between causative pathways between safety behaviour and person-job fit at within and between-person levels of analysis (Research Question 2) (Figs. 1–8), albeit with

Table 1
Daily correlation Matrix.

	Mean (SD)	Within				Between (Baseline Data)			
		DA Fit	NS Fit	Safety Com.	Safety Part.	DA Fit	NS Fit	Safety Com.	Safety Part.
DA Fit (Within)	4.14 (0.58)	1							
NS Fit (Within)	3.54 (0.93)	0.38*	1						
Safety Com. (Within)	4.2 (0.48)	0.1*	0.03	1					
Safety Part. (Within)	3.5 (0.87)	0.02	0.03	0.47*	1				
DA Fit (Between)	4.16 (0.82)	0.59**	0.54**	0.37**	0.26*	1			
NS Fit (Between)	3.66 (1.1)	0.39**	0.79**	0.29**	0.38**	0.67**	1		
Safety Com. (Between)	4.22 (0.56)	0.39**	0.37**	0.6**	0.44**	0.32**	0.37**	1	
Safety Part. (Between)	3.63 (0.94)	0.23*	0.33**	0.38**	0.59**	0.35**	0.36**	0.62**	1

Pearson correlations significant at the 0.05* and 0.01** levels. Correlations (i.e., concurrent associations) between the within-person level variables was conducted using repeated measures correlations, implemented in the *rncorr* package (version 0.4.5) for the R Programming Language (Bakdash & Marusich, 2017). DA fit = demands-abilities fit; NS fit = needs-supply fit.

Table 2
Weekly correlation Matrix.

	Mean (SD)	Within				Between (Baseline Data)			
		DA Fit	NS Fit	Safety Com.	Safety Part.	DA Fit	NS Fit	Safety Com.	Safety Part.
DA Fit (Within)	4.18 (0.56)	1							
NS Fit (Within)	3.54 (1.01)	0.29*	1						
Safety Com. (Within)	4.24 (0.49)	0.26*	0.07	1					
Safety Part. (Within)	3.54 (0.86)	0.23*	0.175*	0.41*	1				
DA Fit (Between)	4.13 (0.83)	0.55**	0.46**	0.33**	0.36**	1			
NS Fit (Between)	3.62 (1.1)	0.34**	0.71**	0.19	0.39**	0.67**	1		
Safety Com. (Between)	4.2 (0.53)	0.37**	0.28*	0.53**	0.47**	0.29**	0.34**	1	
Safety Part. (Between)	3.6 (0.94)	0.27*	0.3**	0.41**	0.64**	0.34**	0.34**	0.61**	1

Pearson correlations significant at the 0.05* and 0.01* levels. Correlations (i.e., concurrent associations) between the within-person level variables was conducted using repeated measures correlations, implemented in the *rmcorr* package (version 0.4.5) for the R Programming Language (Bakdash & Marusich, 2017). DA fit = demands-abilities fit; NS fit = needs-supply fit.

respect to different variables. Specifically, evidence of reverse causation was demonstrated at both a within-person level in the weekly within-person data (between Safety Participation and NS Fit) and the weekly and daily between-person data (between Safety Compliance and DA Fit). These findings are further explored in the discussion.

8. Discussion

The current study examined how frontline workers navigate safety behaviours and person-job fit in a safety critical environment. In line with self-regulation theory (Lord et al., 2010), our results provide the first evidence that across multiple temporal cycles (i.e., daily and weekly) and multiple levels of analysis (i.e., within and between), reciprocal feedback loops in the form of normal and reverse causative pathways exist in the pursuit of self-regulatory goal states within safety critical work environments. Although our results on the between-person level need to be interpreted with some degree of caution given sample size limitations, our findings overall are consistent with research in other management and applied psychology domains demonstrating the existence of bi-directional self-regulation pathways in relation to learning (Hardy et al., 2019), performance (DeShon et al., 2004), and affective (Gabriel et al., 2014) processes. Below, we detail the

theoretical and practical implications of these finding for self-regulatory theory.

8.1. Self-regulation theory: Dynamic safety behaviour and fit relationships

Our results have several implications for hierarchical cyclical models of self-regulation in safety critical contexts defined by pursuit of desired person-job fit states (Lord et al., 2010). Firstly, and in partial support of Hypotheses 1a and 1b, such person-job states appear to be desirable for employees in safety critical contexts, possibly for the latitude they provide employees to carry out their core job requirements in a safe way, with our findings suggesting that person-job fit can drive positive safety outcomes. Such normal causation exists primarily on the between level with both DA Fit predicting Safety Compliance and NS Fit predicting Safety Participation (across two distinct temporal lags), suggesting desired self-regulatory states of person-job fit in safety critical contexts appears to drive behaviour primarily at a higher level of abstraction (i.e., at a between person level). Surprisingly, we found no normal causation relationship at a within-person level. The results appear to be in line with the emerging body of literature on PE Fit, where the very few studies that have been conducted on fit-to-outcome relationships show

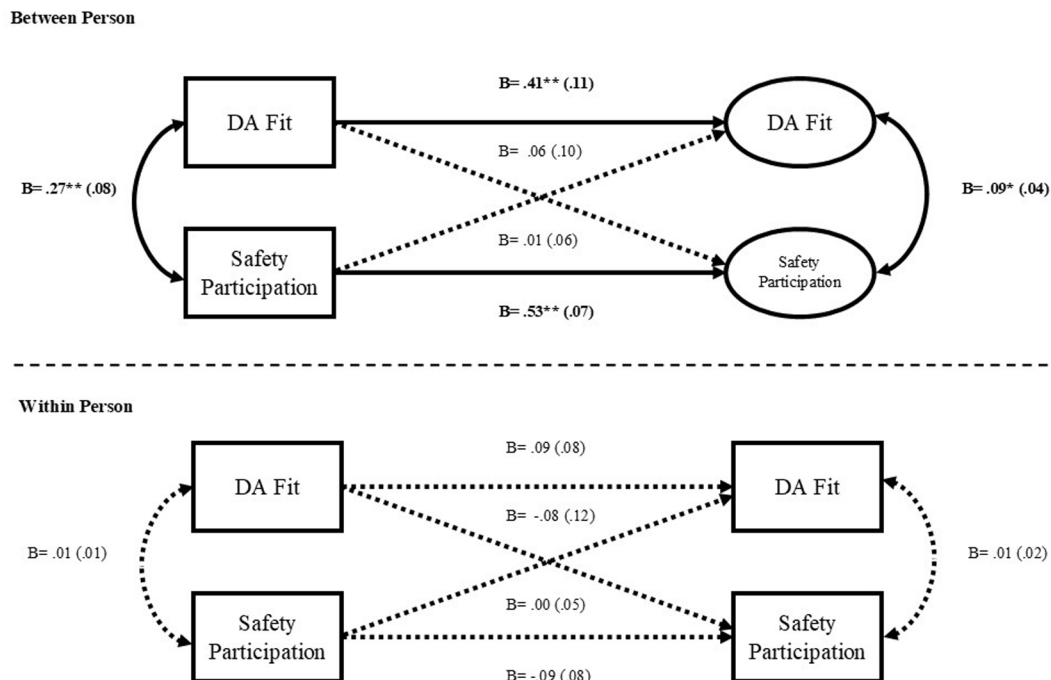


Fig. 1. Daily Safety Participation-DA Fit Multilevel CLPM.

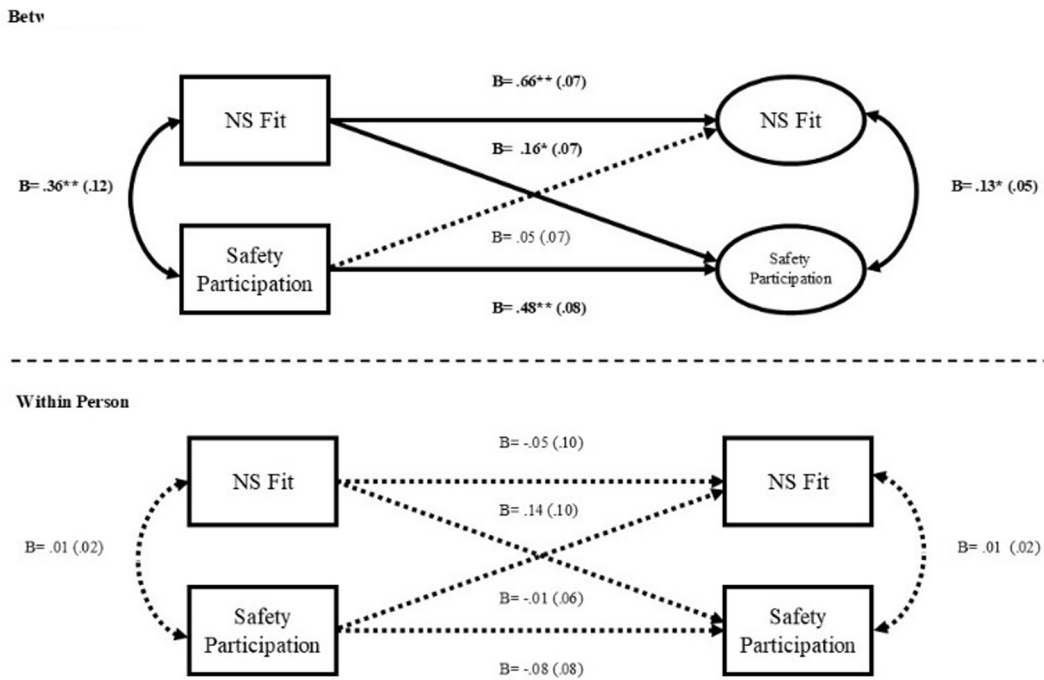


Fig. 2. Daily Safety Participation-NS Fit Multilevel CLPM.

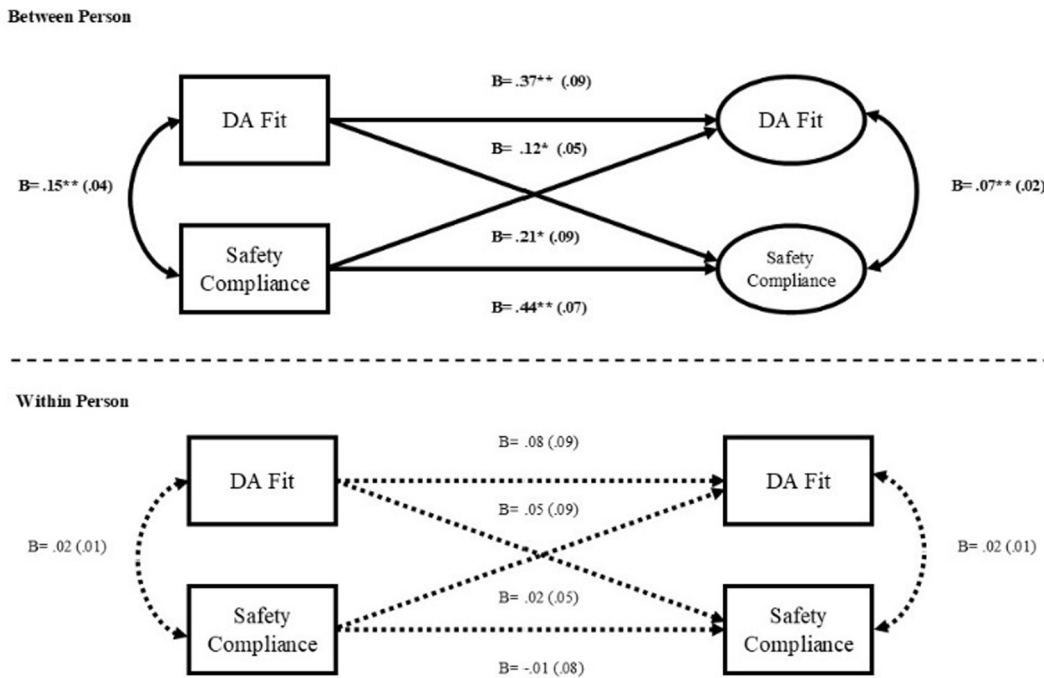


Fig. 3. Daily Safety Compliance-DA Fit Multilevel CLPM.

that, on the within-person level, linear causation effects (both normal and reverse) are often absent (Vleugels et al., 2018). It may be the case that safety compliance and participation may operate according to a threshold model such that only employees with exceptionally high levels of DA fit and NS fit may have enough self-regulatory capacity left to engage in additional (i.e., above average) safety behaviours over and above what they are already required to display on a daily or weekly basis. Alternatively, the relationship between person-job fit and safety behaviour may adhere to an inversely U-shaped curvilinear pattern, similar to the relationships between PE fit and organisational citizenship

behaviours (Vleugels & Flatau-Harrison, 2023), such that situational increases in person-job fit that exceed average within-person levels fail to trigger a corresponding increase in safety behaviours. Lastly, relationships between person-job fit and safety behaviours may unfold concurrently rather than lagged (Vleugels et al., 2018), implying that even our daily time intervals were insufficiently short to capture the immediate stimulus-response impact of person-job fit on safety participation and compliance. Whilst the latter argument is supported by the high covariances between concurrent measures of fit and safety behaviour, future research will need to test and evaluate the validity of these

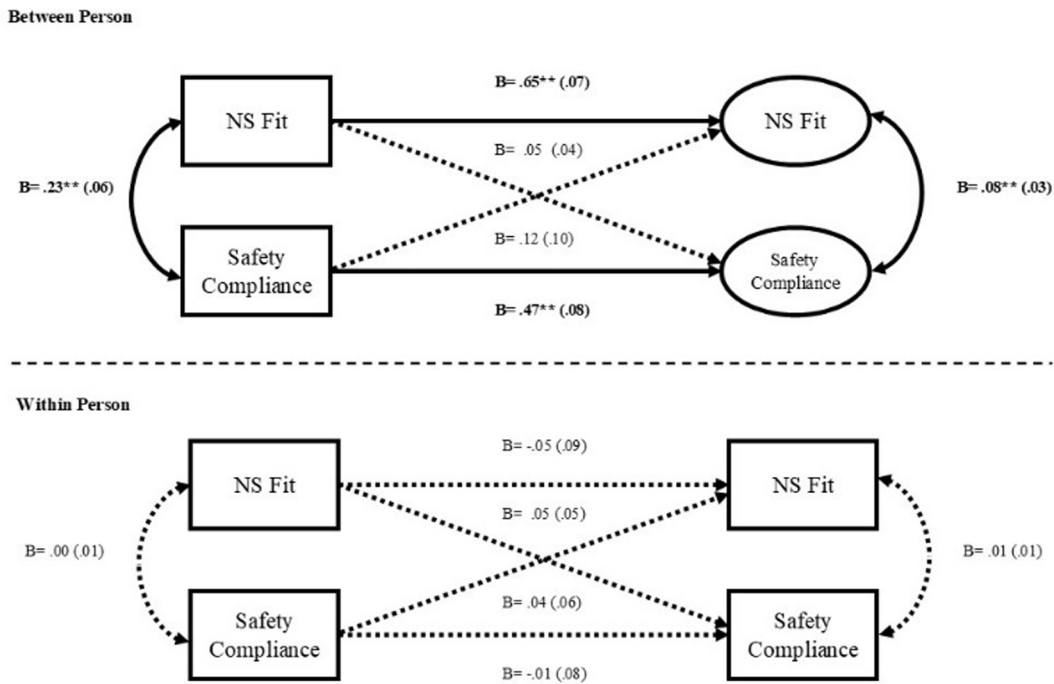


Fig. 4. Daily Safety Compliance-NS Fit Multilevel CLPM.

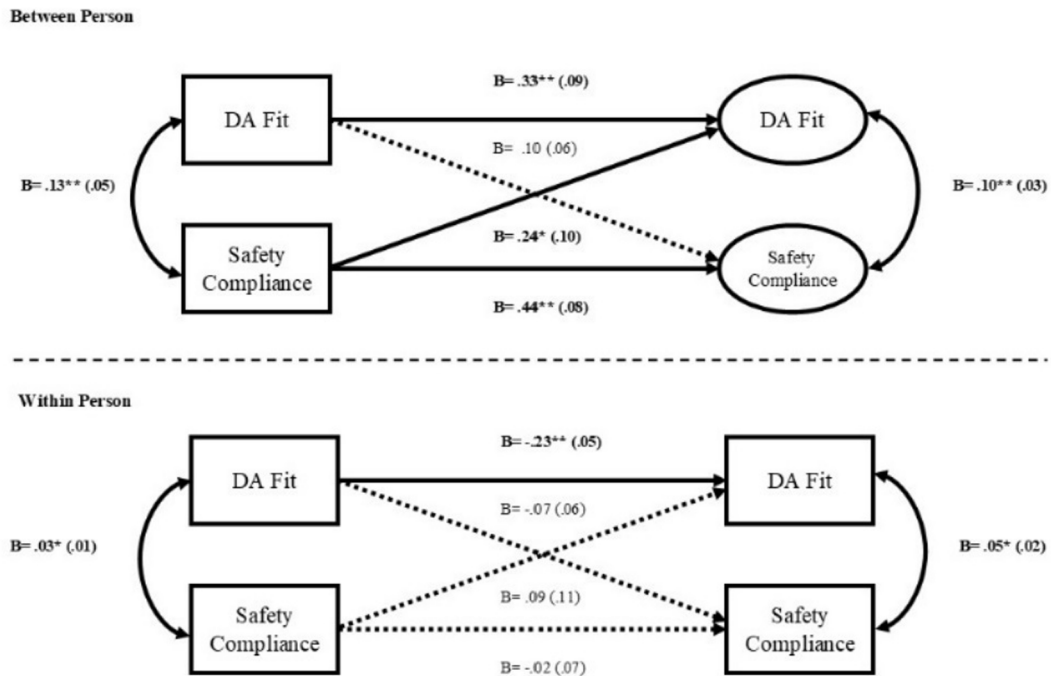


Fig. 5. Weekly Safety Compliance-DA Fit Multilevel CLPM.

various competing explanations.

Secondly, and in partial support of Hypotheses 2a and 2b, we found reverse causative processes in two pathways, whereby safety behaviour predicted future person-job fit and demonstrate that person-job fit referents exist as desired goal states at intermediate cyclical levels (i.e., weeks) or higher levels (i.e., at the between level) of temporality. The exact relationships appear to be dependent on the level of analysis, with reverse causation existing at the within-person level for safety participation when predicting weekly NS Fit, but on the between-person level for safety compliance predicting DA Fit. This may reflect the degree to

which safety behaviours feedback into job fit perceptions given their criticality in frontline work contexts. For example, at reasonably high and consistent levels of execution, employees may not experience any impact of additional increases in safety compliance on their person-job fit at the within-person level because the behaviour already is so innate to the role. In sum, and with reference to the research questions explored, our findings suggest that different self-regulatory processes occur across different temporal scales (i.e., days versus weeks) and different levels of analysis (i.e., within versus between), which suggests that a complex relationship exists between person-job fit and safety

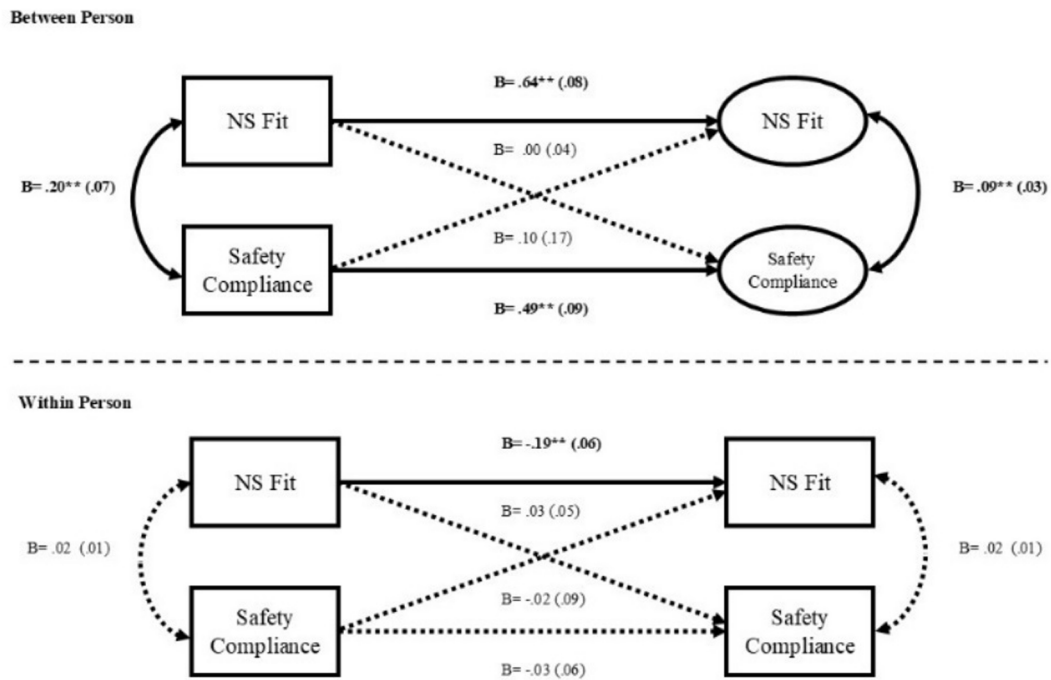


Fig. 6. Weekly Safety Compliance-NS Fit Multilevel CLPM.

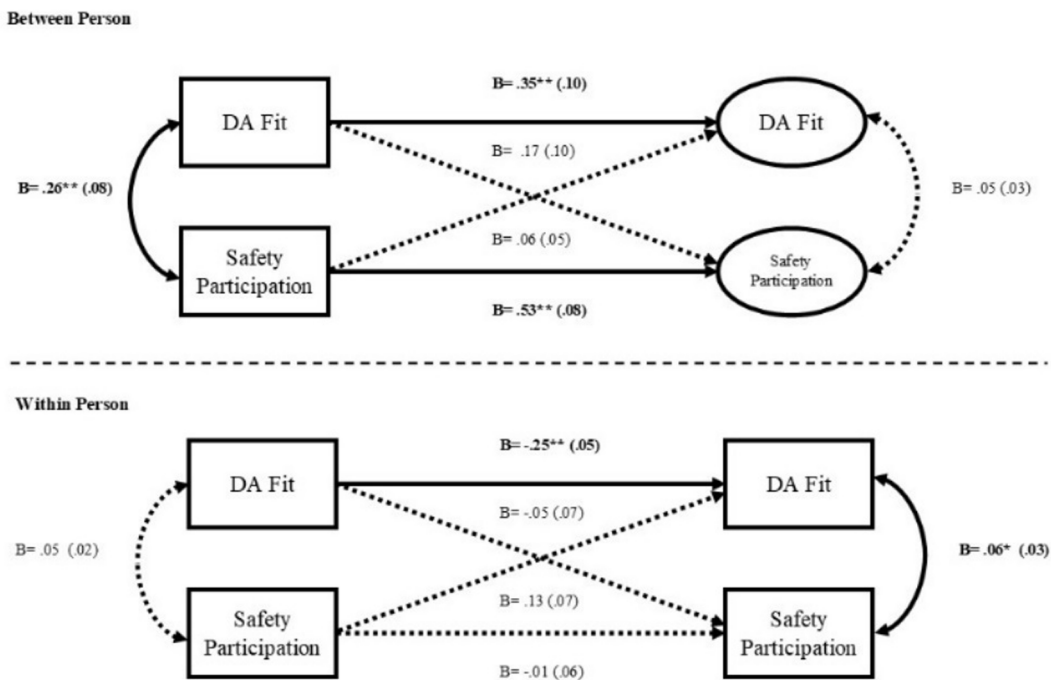


Fig. 7. Weekly Safety Participation-DA Fit Multilevel CLPM.

behaviour in frontline work contexts.

It is also worth noting the patterns of first order auto-correlation effects (i.e., associations between successive measurements of the same DV) for both person-job fit and safety behaviour we observed. First, both DA fit and NS fit showed significant negative autocorrelations at the weekly level, implying an alternating pattern whereby if person-job fit dimensions were lower at the prior time point value, the subsequent time point value is likely to be above average, and vice versa. Negative autocorrelations imply strong bracketing around the long-running mean of the measurement series (Losb, 2010). This suggests

that the factors which trigger individuals to initially experience change in their person-job fit concurrently trigger compensatory or corrective mechanisms to shift future person-job fit levels back towards the long-running baseline level. This pattern is similar to what has been observed in previous research (e.g., Vleugels et al., 2018), and speaks to the dynamic nature of PE fit experiences as well as to the self-regulatory mechanism that is presumed to govern how employees manage their PE fit experiences over time (Vleugels et al., 2023). We did not find auto-correlation on either the daily or weekly level for safety behaviour, suggesting that, unlike experiences of person-job fit, fluctuations in

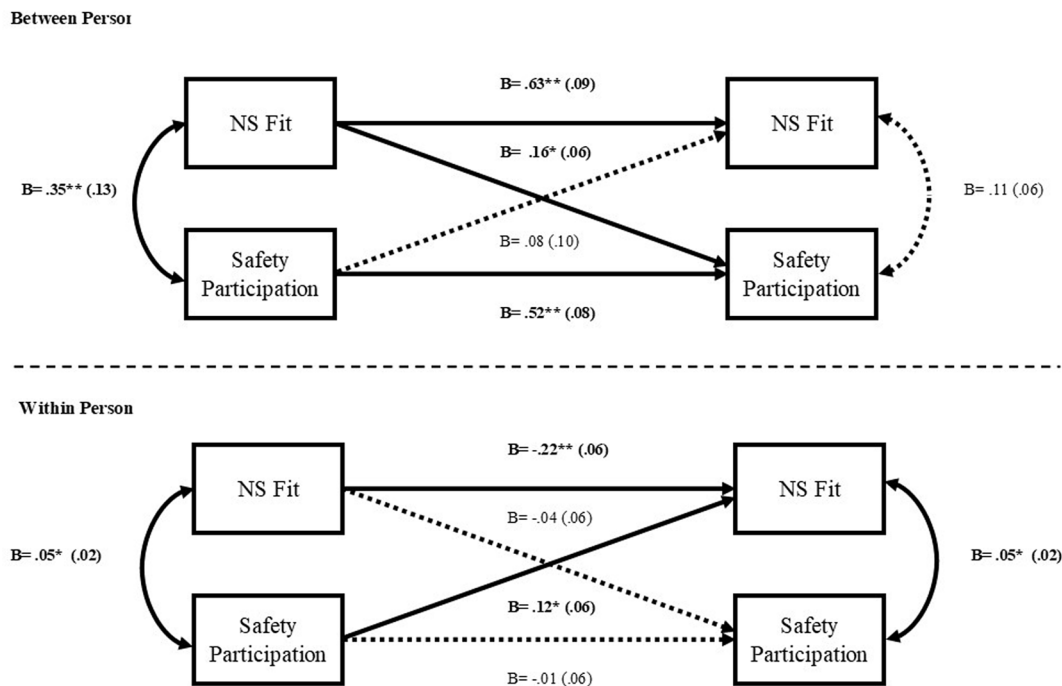


Fig. 8. Weekly Safety Participation-NS Fit Multilevel CLPM.

safety behaviour are not innate to the behaviour itself or tied to the prior state of these behaviours, at least not at the daily or weekly time-lags observed in this study. Rather, when workers *do* experience changes in their reported safety behaviours, the change is best predicted by the long-running individual safety-behaviour mean and the additional influence of person-job fit.

Our findings moreover show that, at the within-person level, there is a beneficial boost to individual NS fit if frontline workers promote safety more than they typically do, however, and at the between-person level, we found that only individuals who reported higher safety compliance than other frontline workers experience average gains in subsequent DA fit. Reductions in safety *compliance* signals a salient risk, as this would indicate the individual has experienced a reduction in a crucial requisite level of safety to carry out task duties which might explain our findings that this behaviour impacts on subsequent DA fit only when considered at a between-person level. Conversely, opportunities to engage in *participation* safety behaviours are likely more intermittent and thus more salient on a within-person level, which might explain our findings that these behaviours predicted within-person NS fit. These findings replicate previous research in other applied psychology and management contexts which have demonstrated an instrumental purpose for behaviours in improving person-job fit in organisations (Bayl-Smith & Griffin, 2018; Bayl-Smith & Griffin, 2017; De Beer et al., 2016; Tims et al., 2016; Vleugels et al., 2023).

8.2. Future research and practical implications

Our findings of reciprocal causality with safety behaviour suggest that future safety research may benefit from applying a job crafting perspective to the models investigated in this paper. Indeed, in contexts of poor alignment between employees' personal attributes and the requirements of their roles and the extreme environment in which they work, frontline workers may respond to perceived misfit by increasing their engagement with safety behaviours to mitigate the risk of injury and accident. On the other hand, rather than being victims of the poor alignment between their personal attributes and the attributes of their jobs, workers could also use safety behaviours to reduce job demands and environmental risk, to provide themselves with greater opportunity

to focus on core job requirements and progressively reshape their work experience. In this way, they may benefit from engaging in self-directed job crafting behaviour in that this may help to proactively increase person-job fit (Tims et al., 2016), particularly in contexts involving physical job crafting (Lu et al., 2014). Given the recent development of even more nuanced prevention and promotion skill and task crafting scales (Bindl et al., 2019), future research could explore the utility of such approaches in safety critical contexts by investigating the specific relationships between safety behaviours, person-job fit, and these alternative perspectives of job crafting.

The practical implications for safety management in relation to the evidence for normal causality is clear. Nurturing person-job fit appears to be crucial in a safety critical context, particularly for its role in encouraging employees to engage in relevant (and required) safety behaviours – which is especially critical in a frontline work context. This replicates prior research by demonstrating that fit is a strong precursor to safety behaviour on the between-person level (Sherry, 1991; Wang et al., 2021). From a practical selection and assessment perspective, these results suggest it is still important that employees are being selected based on the alignment between their skillset and the requirements of the job to ensure safety compliance, and the alignment between their own needs and desires and job attributes to ensure safety participation. This corroborates with other recent work which indicates that a range of attributes that have been proven to be critical in safety-dominated frontline work environment should be assessed in the recruitment and selection phases, such as personality traits (Beus et al., 2015). These findings also have implications for the post-hire phase, in that employees need to be supported and be provided the resources and (safety) training they need to achieve adequate levels of NS and DA fit which can then be leveraged to stimulate adequate levels of safety behaviours.

The practical implications for safety management in relation to the evidence of reverse causality are also meaningful. Given our results, which suggest that safety behaviours and person-job fit operate in frontline staff as a bidirectional system, management would benefit from encouraging safety behaviours amongst frontline staff not only from a safety perspective (i.e., for their role in reducing potential accidents), but also for their role in promoting and encouraging improved person-

job fit. As we highlighted in the introduction, safety behaviours may improve such perceptions of person-job because of the latitude they provide employees to engage with the core requirements of their job. Managers could therefore consider analysing and subsequently promoting the positive impact of such behaviours on non-safety related outcomes. This could include field communication at the start of the working day or week, promoting the positive benefit such behaviours might have on reducing inefficiencies in employee daily work tasks, on improving team dynamics, and on improving service quality in patient facing roles. Underpinning such messaging with a perspective of how these safety behaviours are core to the job, rather than something employees need to (solely) engage in from a personal risk reduction perspective, may improve the positive reciprocal relationships we have observed with person-job fit. Such advice however must be taken with some degree of caution, as our research is the first to demonstrate such relationships for safety behaviours and person-job fit specifically, even though the body of literature that demonstrates the presence of such reverse causality in PE fit research at the stable, between-person level is steadily increasing (Vleugels et al., 2023). Furthermore, it is likely that there may be moderating relationships present which may shape the reverse causative relationship between safety behaviour and person-job fit, such as strong safety cultures and certain job characteristics (i.e., demands and resources).

8.3. Limitations

Despite the design strengths of the current paper, including use of dynamic measurement of variables allowing for causal inference, there are several limitations to note. Firstly, although the intensive nature of the diary study collection resulted in a large sample size on the within-person level of analysis, the use of only 81–86 frontline workers means that findings on the between level of analysis need to be treated with some degree of caution. However, it is important to note that the means at the between level for each participant are informed by several data points (i.e., on average, 7 data points for both the daily and weekly datasets). Therefore, while our between-person sample size is lower, we have reliable estimates of each participant's mean, extending more confidence to findings on the between-person level than in conventional single-measurement designs. Nevertheless, we acknowledge that future research investigating self-regulatory feedback cycles at different levels of analysis should replicate our findings with larger sample sizes.

Secondly, the existence of several clusters which reported no within-person variation was unexpected and may have occurred for several reasons. It is possible that only using two items to measure the focal constructs may have restricted the variance captured, particularly over such short timeframes (i.e., days and weeks), although this is a common and necessary approach in diary study designs. Future research would also benefit from an examination of longitudinal person-job fit perceptions and safety behaviours across extended lags and using more comprehensive construct measures, in conjunction with lag-agnostic methods such as continuous time structural equation modelling (Olenick & Dishop, 2022).

Thirdly, although it is a common approach in previous research, all data collected was self-reported which may have positively inflated sample means. Indeed, some of the construct means in the sample collected were particularly high (i.e., safety compliance weekly mean = 4.22), however this may also reflect the safety critical nature of the frontline work. Future research should focus on collecting data which includes other-rater observations of safety behaviour in addition to self-report observations.

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CRediT authorship contribution statement

Huw Flatau-Harrison: Writing – review & editing, Writing – original draft, Validation, Project administration, Methodology, Investigation, Formal analysis, Data curation, Conceptualization. **Micah K. Wilson:** Conceptualization, Data curation, Writing - original draft, Writing - review & editing, Investigation, Validation, Formal analysis, Methodology. **Wouter Vleugels:** Conceptualization, Writing - original draft, Writing - review & editing.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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