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Pay and Train to Sustain: A Dynamic Human Capital Resources View of the Relationship Between HRM Practices and Organizational Performance Over Time

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ABSTRACT

The relationship between human resource management (HRM) practices and organizational performance has received considerable attention in the literature. Most extant studies, however, have taken a static view, while longitudinal aspects of the HRM-performance link are less studied. We develop an integrative framework drawing on human capital resources theory that enables us to develop hypotheses on whether and how increases in dimensions of HRM practices within organizations over time lead to improvements in organizational performance. We test our hypotheses using a unique large high-frequency panel dataset from the English adult social care sector and fixed effects instrumental variables (FEIV) estimation that allows us to address some biases in prior work. We find that increases in skill-enhancing and motivation-enhancing HRM bundles are significantly associated with increases in performance among organizations with low initial human capital resources stock. Our results suggest that the latter relationship is realized partly via a reduction in staff turnover, which, in turn, increases the organization's human capital resources stock. Overall, the article's contribution is to develop and test a dynamic extension of human capital resources theory that considers the processes of human capital resources stock depletion and accumulation over time and the path-dependent relationship between investments in HRM practices and performance.

1 | Introduction

The relationship between human resource management (HRM) practices and organizational performance has been investigated both theoretically and empirically (Appelbaum et al. 2000; Batt and Colvin 2011; Cappelli and Neumark 2001; Forth and Bryson 2019; Guest 2011; Huselid and Becker 1996). Nevertheless, less is known about the mechanisms linking HRM practices and performance over time (Jiang and Messersmith 2018). Therefore, in this article, we ask the following questions: What is the nature of the longitudinal relationship between HRM and organizational performance? And, what are the mechanisms via which change in bundles of HRM practices within an organization over time is linked to change in organizational performance?

Despite the large number of studies in the literature examining the HRM-performance relationship, few studies explicitly develop longitudinal theories and hypotheses on the relationship between change in the focal constructs within organizations over time (Ogbonnaya et al. 2023; Schmidt and Pohler 2018). This is because most existing studies purporting to articulate the latter relationship deploy static frameworks that explain differences between organizations at a given point in time. This represents

a knowledge gap in the literature, as theoretical mechanisms underpinning cross-sectional and longitudinal relationships are expected to be systematically different (Bliese et al. 2020; Ogbonnaya et al. 2023; Ployhart and Vandenberg 2010).

In addition to this, longitudinal studies in strategic HRM (SHRM) estimating the relationship between HRM and organizational performance within organizations over time are characterized by several limitations. The first limitation is that they do not leverage within-firm variation over time on measures of HRM and organizational performance. This is equivalent to committing the ecological fallacy (Diez-Roux 1998) that occurs when one attempts to draw inferences about a within-firm relationship over time from estimates of between-firm relationships (Bliese et al. 2020). This may lead to incorrect inferences about the validity of the theory under investigation and misleading implications for practice. Another limitation of extant empirical studies pertains to the identification of causal effects of HRM on organizational performance. Drawing causal inferences is at the heart of testing SHRM theories, as all theoretical hypotheses are explicitly or implicitly associated with a causal mechanism (Schmidt and Pohler 2018; Shin and Konrad 2017; Wright et al. 2005). It is also key for further theory development, which is inextricably linked to robust rejection of extant theories (Bliese et al. 2020; Schmidt and Pohler 2018). Producing robust evidence is also crucial for informing managerial practice, as effective HR management requires knowledge of whether, how, and to what extent investment in different aspects of the HR architecture contributes to the achievement of organizational objectives (Wright et al. 2005). Most longitudinal studies, however, suffer from endogeneity bias in estimation stemming from omitted variables, reverse causality/simultaneity, and measurement error (Garmendia et al. 2021; Piening et al. 2013; Schmidt and Pohler 2018; Wright et al. 2005). This is despite the fact that longitudinal studies are uniquely placed to address some of these biases. An example of such bias is bias from unmeasured organizational factors that are fixed, or change slowly, over time, and are correlated with both the HR system and organizational performance, such as leadership behavior, managerial ability, and organizational culture (Schmidt and Pohler 2018; Wright et al. 2005). Finally, several of the existing longitudinal studies are based on small and selective samples of businesses which lead to invalid inferences (Shin and Konrad 2017) and make it difficult to generalize and extrapolate their findings to the population of interest and other contexts (Schmidt and Pohler 2018; Wright et al. 2005).

This study contributes to the literature theoretically and methodologically by addressing the aforementioned gaps in two ways. First, we develop an integrative theoretical framework linking change in bundles of HRM practices and change in organizational performance within organizations over time by drawing on the theory of human capital resources (HCR) (Ployhart et al. 2014; Ployhart and Moliterno 2011). We articulate how HRM dimensions are intertwined with the dynamic processes of depletion and accumulation of firm-specific human capital (HC) over time driving change in organizational performance. In addition, we hypothesize that turnover operates as a strategic variable reconfiguring the organization's HCR, while the effects of HRM dimensions on performance are characterized by path-dependent heterogeneity. This theoretical synthesis informs the development of longitudinal hypotheses pertaining to changes in HRM bundles, key mediators, and organizational performance within organizations over time. Second, we test the formulated hypotheses using a large, representative, high-frequency panel data set from the adult social care (ASC) sector in England using a hybrid fixed effects instrumental variables (FEIV) estimator. This methodological novelty provides a more rigorous research design and analytical approach compared to earlier research that has been dominated by cross-sectional designs. This enables us to operationalize and test hypotheses involving within-organization change in HRM and performance. It also allows us to empirically identify the nature of the longitudinal relationship between HRM and performance by correcting for several sources of endogeneity bias in estimation.

The rest of the article is structured as follows. The next section presents a review of longitudinal studies in HRM, while the third section presents an integrative theoretical framework that guides the development of the hypotheses and describes the mechanisms underpinning relationships between focal constructs. The fourth section discusses the sample, data, and method employed. The fifth section presents the main results of the analysis, and the final section discusses the findings, contributions, and limitations of the study, as well as implications and suggestions for further research.

2 | Review of Longitudinal Studies in SHRM

In this section, we present a critical review of longitudinal studies in SHRM, which include studies collecting data on HRM and organizational performance measures from the same organizations at multiple points in time (Jiang and Messersmith 2018; Ogbonnaya et al. 2023; Saridakis et al. 2017). A summary of the studies included in our review is presented in Table A1. Our review excludes time-lagged studies examining how HRM measures at one point in time predict performance measures at a later point in time (Jiang and Messersmith 2018; Saridakis et al. 2017) as well as time-series studies examining change in performance before and after the introduction of HRM practices in a single organization (Tregaskis et al. 2013).

Longitudinal studies have been highlighted as being well-placed to examine the HRM-performance relationship within firms over time (Ogbonnaya et al. 2023), as they could abate one key limitation of cross-sectional, time-lagged, and time-series studies. This is the presence of endogeneity bias mainly arising from omitted variables, reverse causality, and measurement error (Schmidt and Pohler 2018; Shin and Konrad 2017; Wright et al. 2005), which hinders valid inferences.

Nevertheless, existing longitudinal studies in SHRM have also been criticized for falling short of addressing the limitations of cross-sectional studies (Bliese et al. 2020; Wright et al. 2005). Saridakis et al. (2017) present one of the few meta-analyses of longitudinal studies in SHRM, including eight studies, and find that HRM has a significant and large positive effect on organizational performance. However, several of the studies included in this meta-analysis, such as those by Aït Razouk (2011) and Sheehan (2014), although they collect longitudinal data, do not leverage within-firm variation in HRM and performance

measures in their estimation. The same holds for other longitudinal studies not included in the meta-analysis by Saridakis et al. (2017), such as those by Kim and Ployhart (2014), Li et al. (2018), Garmendia et al. (2021), and Ogbonnaya et al. (2023). In Aït Razouk (2011), Sheehan (2014), and Garmendia et al. (2021), this is the case because the data includes two periods, and the authors control for lagged performance, which drops one period from estimation. Moreover, in the study by Li et al. (2018), there are two waves of data on the same firms, but the authors estimate the effects of HRM measures in the initial period on the level of performance in the subsequent period. Similarly, Ogbonnaya et al. (2023) have four periods of data, but they restrict the estimation of all models to two periods and control for lagged performance in estimation. Therefore, these studies are characterized by the same limitations as time-lagged studies. The study by Kim and Ployhart (2014) estimates random coefficient growth models using information on HRM only from one period and performance over seven periods in estimation. As suggested by Bliese et al. (2020) and Certo et al. (2016), because this approach leverages only between-firm variation in HRM measures at one point in time, it is plagued with the same source of biases as cross-sectional studies.

There are also a few other studies, such as those by Birdi et al. (2008), Shin and Konrad (2017), and Schmidt and Pohler (2018) that use longitudinal data from multiple periods and employ estimation methods that leverage both between-firm and within-firm variance over time in the HRM and performance data. Therefore, these studies identify a combination of between-firm and within-firm relationships, which may be systematically different and, thus, misrepresent the within-firm relationship among the constructs (Bliese et al. 2020; Certo et al. 2016; Ployhart and Vandenberg 2010). Moreover, as discussed above, these studies are also expected to suffer from the same biases plaguing cross-sectional studies leveraging between-firm variance in estimation.

In contrast to the above studies, the studies by Huselid and Becker (1996), Piening et al. (2013), and Diaz-Fernandez et al. (2017) estimate the longitudinal HRM-performance relationship by leveraging only within-firm variation over time and address some of the key biases in estimation. Huselid and Becker (1996) employ fixed effects (FE) estimation that controls for time-invariant omitted variables and error correction methods to address bias from measurement error and find a statistically significant but small positive effect of HRM on organizational performance. Nevertheless, their methods do not address bias arising from reverse causality, which implies that it is not clear whether their findings suggest that HRM drives performance or vice versa. Piening et al. (2013) employ a system Generalized method of moments (GMM) estimator for longitudinal data that is suitable for estimating models including a lagged dependent variable as a control and address the main biases in estimation by employing instrumental variables (IV). This is because IV has been the standard econometric method for correcting biases arising from omitted variables, reverse causality, and measurement error (Wooldridge 2010). Their results suggest a significant and positive effect of HRM on firm performance. Despite this, the Piening et al. (2013) study is characterized by two limitations: the first limitation is that their hypotheses and measures are about employees' perceptions of the HRM system, which is a different construct than the actual HRM system; and the second limitation is that their data are from public hospitals in England, where predictions of standard SHRM theories of SCA may be less applicable since they represent the non-profit sector. Similarly to Piening et al. (2013) and Diaz-Fernandez et al. (2017) employ a GMM estimator suitable for dynamic panel data models and find a positive effect of HRM practices associated with employment security on firm labor productivity. However, the key limitation of the latter study is that diagnostic tests do not provide support for some of the assumptions, such as that of instruments' exogeneity, which casts doubt on the validity of their estimates. Our study addresses some of the limitations of existing longitudinal studies in SHRM by implementing an FEIV estimator on a large representative longitudinal data set from the ASC sector in England. This approach allows us to correct for some biases in estimation associated with omitted variables, measurement error, and reverse causality.

3 | Theoretical Background and Hypotheses Development

The dominant theoretical perspective in SHRM draws on the resource-based view (RBV) (Barney 1991; Wernerfelt 1984) and posits that bundles of HRM practices underpin sustainable competitive advantage (SCA) and lead to superior organizational performance via developing HC that is valuable, rare, inimitable, and non-substitutable (VRIN) (Wright et al. 2001).

The literature has established that it is HRM bundles, that is, groups of HRM practices, rather than individual practices that impact organizational performance (Jiang et al. 2012; Subramony 2009) and identified three key HRM dimensions or bundles, following the Ability Motivation and Opportunity (AMO) model: (a) a *skill-enhancing bundle* equipping employees with the requisite abilities and knowledge; (b) a *motivation-enhancing bundle* boosting employees' extrinsic and intrinsic motivation to perform their work; and (c) an *opportunity-enhancing bundle* providing employees with opportunities to use their abilities and achieve organizational objectives (Appelbaum et al. 2000; Jiang et al. 2012; Jiang and Messersmith 2018).

Moreover, a recent stream in the literature presents a more nuanced view of how the HC of individual employees can give rise to business unit-level VRIN HCR that drive SCA (Ployhart et al. 2009, 2014; Ployhart and Moliterno 2011). Ployhart et al. (2009) view HCR as a different construct than HC, as they define it as a unit-level aggregate of the subset of individual-level knowledge, *experience*, skills, abilities, and other characteristics (KESAOs) (Ployhart et al. 2009), which constitute HC, that have unit-level consequences. Their framework postulates that HCR arise from combinations of KESAOs that are VRIN, as they reflect inter-relationships among KESAOs that are *socially complex*, causally ambiguous, and *path dependent*. This suggests another key difference between HC and HCR: in contrast to HC, which creates value due to the underlying individual KESAOs that are VRIN because they are firm-specific, HCR create value due to combinations of KESAOs that are VRIN. This holds even if the underlying KESAOs are not VRIN because they involve complex inter-relationships among underlying

KESAOs, including complementarities and synergies (Ployhart et al. 2014).

A key limitation of the RBV and its application to SHRM, including HCR theory, is that it is static, that is, it does not explicitly consider time, and thus, it can only explain between-firm differences in performance at a given point in time (Ployhart et al. 2009; Wright and Haggerty 2005). The latter can provide little insight about the longitudinal relationship between HRM and organizational performance. This is because studies show that the direction, magnitude, and mechanisms underlying relationships between focal constructs *across* organizations at a given point in time are likely to be systematically different from relationships between changes in the same constructs *within* organizations over time (Bliese et al. 2020; Maxwell and Cole 2007; Ployhart and Vandenberg 2010).

A dynamic variant of the RBV has been developed (Helfat and Peteraf 2003) to address this limitation, which considers how organizational resources evolve over time and the implications of the resources' life cycle, including the birth, development, and maturity of resources over time, for SCA. Nevertheless, this perspective has not been employed to shed light on the longitudinal relationship between HRM and organizational performance. Moreover, it has been suggested that HCR is a dynamic construct that can be developed over time, but only a handful of studies have considered its longitudinal relationship with organizational performance. A notable exception to this is the study by Ployhart et al. (2009), who adopt a dynamic RBV/HCR perspective to examine the link between changes in HCR in the context of services, as reflected in unit service orientation, and change in organizational performance over time. Ployhart et al. (2009) draw a distinction between the HCR stock, that is, the level of HCR in the business unit at a given point in time, and HCR flows, defined as changes to the HCR stock over time. They find that, although a higher-quality stock is important for performance, HCR flows are the key driver of change in organizational performance over time. Ployhart et al. (2009), however, acknowledge that their study does not consider how HCR stock changes and how HCR flows are generated in the first place. Thus, they do not articulate how changes in HRM bundles within organizations over time can lead to changes in organizational performance via their influences on the HCR stock and flows.

Our study aims to address this gap as well as the lack of conceptual articulation of the mechanisms underpinning the longitudinal relationship between HRM and organizational performance by building on and supplementing the longitudinal HCR view of Ployhart et al. (2009). The novelty of our perspective lies in presenting an integrative framework that postulates temporal mechanisms linking HRM and performance, which are systematically different from those of prior static theories of SHRM.

3.1 | The Dynamic Relationship of HRM and Organizational Performance: Depletion and Accumulation of the HCR Stock

Following Wright and Haggerty (2005), integrative frameworks in SHRM consist of two layers: a meta-theory that provides the broad rationale of why HRM and organizational performance are linked; and a middle-level process theory describing in detail how this linkage is realized. In this section, we present the broad rationale underlying the relationship between changes in HRM within organizations over time and change in performance, building on the longitudinal HCR perspective of Ployhart et al. (2009), which is based on the dynamic RBV of Helfat and Peteraf (2003).

In contemplating a longitudinal theory of SHRM, one should first consider how HRM bundles change within an organization over time in the first place (Ployhart and Vandenberg 2010). This is well documented in the literature that establishes that HRM bundles change over time to match changes and turbulence in the external environment—reflecting economic, market, and technological conditions—business strategy, and the firm's life cycle (Minbaeva and Navrbjerg 2023; Wright et al. 2001). Moreover, several studies highlight that individual practices may not change much over a given period of time, but HRM bundles are expected to exhibit higher volatility (Ogbonnaya et al. 2023; Ployhart et al. 2009). This encompasses both (i) *positive* change, which reflects increased investment associated with extending, scaling up, and updating existing practices or introducing new practices; and (ii) *negative* change, which reflects decreased investment associated with scaling down and dropping practices, as they become obsolete.

Following Ployhart et al. (2009), we posit that increased investments in HRM bundles over time are expected to lead to the *accumulation* of the organization's stock of HCR, that is, generate HCR inflows, which in turn lead to increases in organizational performance. The rationale for this is that HRM investments are needed to maintain the HCR stock of the firm, which is the source of SCA, and to counteract the *depletion* of the stock over time. There are several processes underlying this depletion. First, as physical capital assets, the HCR stock may depreciate, that is, lose value at a constant rate over time (Becker 1962), reflecting the fact that individual employees' knowledge and experience underlying the organization's HCR may become gradually obsolete. Second, there are life-cycle effects (Helfat and Peteraf 2003) reflecting the fact that VRIN properties of resources may become weaker as resources develop and mature over time, resembling the product life cycle, where products start off as innovative and become more standardized as they mature. Third, changes in the external environment may pose threats (or opportunities) to HCR, as, for example, new technologies and processes may render HCR both substitutable and imitable (Ployhart et al. 2009). Fourth, staff turnover, particularly when it is particularly high, represents an HCR outflow that poses a challenge to maintaining a sufficient HCR stock.

These arguments suggest that increased investments in HRM bundles generate HCR inflows that replenish the organization's HCR stock, which is subject to simultaneously operating dynamic processes of *depletion* and *accumulation*. This, combined with the fact that HCR stock is the source of SCA and that higher stock at any given point in time leads to higher organizational performance, implies a positive longitudinal association between HRM bundles and organizational performance.

The above analysis leads to the following hypotheses:

H1. *Increases (decreases) in the skill-enhancing HRM dimension within organization over time are associated with increases (decreases) in organizational performance.*

H2. *Increases (decreases) in the motivation-enhancing HRM dimension within organization over time are associated with increases (decreases) in organizational performance.*

H3. *Increases (decreases) in the opportunity-enhancing HRM dimension within organization over time are associated with increases (decreases) in organizational performance.*

3.2 | HRM Dimensions and Organizational Performance: HCR Stock and Flows and Path-Dependent Heterogeneity

In this section, we present the middle-level process theory, articulating the specific mechanisms and channels linking each HRM dimension and organizational performance over time. The previous section highlights that increases (decreases) in the three HRM dimensions within an organization over time lead to increases (decreases) in organizational performance, by generating HCR inflows (outflows) that increase (decrease) the HCR stock of the organization.

Based on the discussion of the nature of HCR in one of the previous sections, we posit that increases in the three dimensions of HRM bundles within an organization over time can increase the unit-level HCR stock via two channels. First, by increasing the organization's KESAOs over time through the *accumulation* of capabilities and firm-specific experience via increases in employees' length of service (tenure) in the organization. Second, by changing the inter-relationship among KESAOs and how these are re-combined and re-configured into a unique unit-level HCR resource.

The skill-enhancing HRM bundle includes aspects of training and development, such as "core" aspects associated with training extensiveness in the organization; training for job-specific or firm-specific skills through accredited or non-accredited courses; as well as broader practices such as cross-functional training and new employee orientation (Ployhart et al. 2009). Thus, it is expected to affect unit-level HCR primarily via the first channel. This is because increased investments in skill-enhancing practices over time increase the stock of HCR, through addressing deficiencies and gaps in employees' skills. Moreover, learning through processes of experiential learning and trial-and-error over time, allows employees and managers to become aware of their skills gaps and pursue additional training to address these (Aryee et al. 2016). Additionally, increased investment in "managerial" skills (Forth and Bryson 2019) expand the organization's base of strategic HCR (Delery and Roumpi 2017). This is achieved via a recombination and reconfiguration of the skill-set of employees, since more knowledgeable and well-trained line managers and supervisors are able to manage the HCR stock of the organization more efficiently (Georgiadis and Pitelis 2012, 2016).

Change in the motivation-enhancing HRM bundle—which encompasses practices associated with competitive compensation, promotion opportunities, and job security—within the organization over time changes the HCR stock through inducing change in the rate of retention of employees and, via reconfiguring HCR. The former channel posits that improvements in employees' pay relative to other market competitors, pay progression over time, working conditions, such as hours of work, promotion opportunities, as well as job security—for example, via shifts from temporary to permanent contractual arrangements—are expected to increase employees' tenure in the organization and, thus, their firm-specific experience. This, in turn, increases the firm-specific KESAOs underlying the organization's stock of HCR and creates superior value than that of competitors (Barney and Wright 1998). The second channel posits that increased investments in motivation-enhancing practices may induce a more efficient reconfiguration of KESAOs, underlying the organization's HCR base, which in turn will lead to higher organizational productivity and performance. This is achieved through providing incentives to individual employees to recombine their KESAOs in a way that increases their individual-level HCR, as well as promote re-combinations of KESAOs across employees, which increase the unit-level HCR and, through that, lead to higher organizational performance.

Finally, the change in the opportunity-enhancing HRM bundle emphasizing flatter management hierarchies, decentralized decision making, and opportunities to exercise autonomy and participation among employees—is expected to change unit-level HCR via the same two channels as above. First, the increased emphasis on opportunity-enhancing practices is expected to increase employees' tenure through promoting their empowerment and involvement in the organization. Second, these practices will provide knowledge and information, as well as incentives for employees to recombine their KESAOs more productively, leading to superior organizational performance.

The above analysis suggests that the effects of HRM dimensions on organizational performance over time manifest via HCR flows, that is, via changes to HCR stock. We also posit that these effects are likely to be *heterogeneous*, and this heterogeneity is expected to be *path-dependent*, that is, dependent on the organization's history and, in particular, on the initial HCR stock. This is consistent with the law of diminishing marginal productivity, which posits that increasing an input to a production process will lead to smaller increases in output as the level of input becomes larger (Varian 2014). In our case, considering that the key input to performance is the HCR stock, this implies that higher HRM investments will lead to higher increases in organizational performance when the initial HCR stock is low, as replenishing a dramatically depleted stock is expected to be more consequential for performance than adding to a high-quality level of initial stock.

The above analysis leads to the following hypotheses:

H4. *Increases (decreases) in unit-level HCR stock mediate the relationship between increases (decreases) in HRM dimensions within organization over time and increases (decreases) in organizational performance.*

H5. *The initial unit-level HCR stock moderates the association between increases (decreases) in HRM dimensions within*

organization over time and increases (decreases) in organizational performance in such as a way that the association is weaker (stronger) when the initial unit-level HCR stock is high (low).

3.3 | Staff Turnover as a Mediator of the Longitudinal Relationship Between HRM Dimensions and Unit-Level HCR

Ployhart et al. (2009) posit that turnover is one of the main sources of change in unit-level HCR stock within organizations over time. Moreover, it is well-established that staff turnover is a strategic variable and key outcome of investments in HRM dimensions (Batt and Colvin 2011; Wright et al. 2001). This implies that changes in HRM dimensions can lead to changes in unit-level HCR stock via inducing changes in staff turnover. This is in line with seminal studies on HCR (Ployhart et al. 2014) that point out that it is only via changes in staff turnover that organizations can adjust some of the KESAOS underlying unit-level HCR, such as employees' mental abilities or industry-specific experience, that are not responsive to organizational or individual investments. Following extant literature, it is expected that increased investments in HRM dimensions will decrease staff turnover, but each dimension is expected to achieve this via different mechanisms (Batt and Colvin 2011). For example, higher investments in skill-enhancing HRM bundles may reduce turnover by increasing firm-specific skills that yield higher returns to employees in the given firm relative to competitors (Lazear 2009). The same holds for higher investments in motivation-enhancing HR dimensions, such as offering higher pay, career progression opportunities, and better working conditions than other employers in the same labor market. In addition to this, higher investments in opportunity-enhancing practices may also reduce staff turnover following the "high road" approach (Osterman 2018), as employees in firms that invest in employee involvement programs express systematically higher satisfaction.

In turn, those changes in staff turnover can change unit-level HCR in two ways. The first way is via changes in KESAOs associated with purging the organization of the KESAOs of leavers, which also depend on the extent to which the latter KESAOs are replaced by new hires. Given this, and following Ployhart et al. (2014), the effect of an increase in turnover above the rate at which the KESAOs of employees leaving the organization can be replaced by new hires on the unit-level HCR depends on whether the non-replaced KESAOs can create value at the unit level. In the latter scenario, an increase in turnover will reduce the HCR of the organization.

Following Nyberg and Ployhart (2013), the second way in which changes in turnover lead to changes in HCR is via reconfiguring the underlying KESAOs. In particular, Nyberg and Ployhart (2013) suggest that modest changes in staff turnover can lead to dramatic erosion of the unit-level base of HCR, even if they do not lead to change in the underlying individual KESAOs. This is because even the slightest change in turnover disturbs the unique inter-relationship among KESAOs across employees that constitute the VRIN HC resource base of the organization.

Based on the above analysis, we formulate our sixth and final hypothesis:

H6. *Decreases (increases) in organizational staff turnover mediate the association between increases (decreases) in the three HRM dimensions within organization over time and increases (decreases) in unit-level HCR stock.*

The postulated conceptual framework and formulated hypotheses are summarized in Figure A1.

4 | Methods

4.1 | Sample and Data

The data used in our analysis are from the English ASC sector. This sector is pertinent to our investigation for several reasons. It is well documented that organizations in ASC, both in the United Kingdom and internationally, are characterized by chronic skills shortages and high turnover that impinge on performance outcomes, including customers' retention and sales growth (Cooke and Bartram 2015). In the English ASC sector, poor HR outcomes and organizational performance have been linked to poor HR practices, reflected in low pay and deteriorating workforce conditions, such as reduced training and development opportunities and increased use of precarious employment contracts (Gospel 2015; Hoque et al. 2011). Despite increases in the National Living Wage—the minimum wage rate covering all those aged 23 years or above, which covers a significant share of care workers (Giupponi and Machin 2018; Vadean and Allan 2021) – pay remains low both in absolute terms and relative to other sectors (Gospel 2015), for example, retail trade and hospitality, which may further explain the relatively lower skills and commitment of the workforce.

The data employed come from the Adult Social Care Workforce Data Set (ASC-WDS) collected by Skills for Care: an independent charity and partner of the UK Department of Health and Social Care, which is the key workforce intelligence unit in the English ASC (Skills for Care 2022). The ASC-WDS is a panel data set, including information on the same establishments providing ASC services and their employees at different points in time, collected regularly online since 2008, and is the leading source of workforce information in English ASC. It includes two sources of information: one at the level of the service provider (establishment), including service providers' characteristics, workforce practices, and performance outcomes; and another at the level of the individual employee, including employees' demographics and outcomes. The data, at any given time period, include information on approximately half of the ASC sector in England and are representative of the population of adult care service providers and their employees along a range of characteristics (Giupponi and Machin 2018). Information provided is based on objective sources, such as timesheets, tax and revenue statements, and contracts (Skills for Care 2022).

The sample of this study consists of all establishments and workers in the ASC-WDS observed biannually (March and September) between 2014 and 2018 inclusive. This included 220,694 observations, from 36,460 establishments over 10 periods (of 6 months

length each), employing 1,907,552 workers. The data included a unique service provider identifier that was used to match individual employees' information to information on their respective employers. There were around 35 employees with individual information per establishment at any given period in the matched employer–employee data.

4.2 | Measures

4.2.1 | Change in Operational Performance

Change in operational performance within the firm over time was measured by change in the number of service users/customers, which has been used as a measure of operational performance by several previous studies (Jiang et al. 2012; Schilke et al. 2018), reflecting the fact that one of the key objectives of organizations is to attract and retain customers (Schmidt and Pohler 2018). As a result of our estimation method (see one of the following sections), changes in all variables used in our analysis were measured by their time-demeaned values, that is, the difference between the level of the variable at the establishment at any given point in time and the average of the variable at the establishment across all periods in the data. In the context of ASC, where prices (fees) for the majority of service users are regulated and paid by local authorities (Giupponi and Machin 2018; Machin et al. 2003), growth in the number of customers may also provide a close proxy of sales growth.

4.2.2 | Change in Skill-Enhancing HRM Dimension

Consistent with the conceptual framework, and following common practice in the literature (Jiang et al. 2012; Jiang and Messersmith 2018), changes in HRM dimensions within organizations over time were measured using time-demeaned values of associated indices. This follows a well-established approach in the HRM and performance literature (Appelbaum et al. 2000; Delery 1998; Macky and Boxall 2007) combining elements into an additive index rather than treating them as items in a scale representing an underlying latent construct. This is because these elements represent alternative and mutually substitutable ways to achieve the same objective (higher level of the theoretical construct).

The "skill-enhancing HRM dimension index" was calculated as the average of 16 standardized indicators reflecting training received and qualifications achieved or currently pursued at the current establishment. This follows closely extant literature (Jiang et al. 2012; Jiang and Messersmith 2018; Schmidt and Pohler 2018), suggesting that skill-enhancing HRM practices reflect all opportunities in the organization for employees to enhance their skills. The list of variables included in this index and descriptive statistics of their levels and changes (time-demeaned values) are presented in Table A2.

4.2.3 | Change in Motivation-Enhancing HRM Dimension

Following extant literature (Batt and Colvin 2011; Jiang et al. 2012), change in motivation-enhancing HRM dimension within organization over time was measured via the time-demeaned value of a "motivation-enhancing HRM dimension index." The index was calculated as the average of 9 standardized indicators, reflecting competitive compensation, promotion opportunities, job security, contractual arrangements, and working conditions, for example, working hours (Jiang et al. 2012; Jiang and Messersmith 2018). In particular, following Batt and Colvin (2011), competitive compensation was measured by relative pay and pay growth; promotion opportunities were measured by the share of employees achieving promotion; job security (Jiang et al. 2012, 1271) was measured by the proportion of the workforce that is full-time and permanent, as opposed to contingent (part-time or temporary) (Batt and Colvin 2011, 702); and measures of working hours represented an additional indicator of job stability and good working conditions (Shaw et al. 1998). The choice of these variables is consistent with earlier literature, and congruent with the context of ASC, but also constrained by the availability of variables in the dataset. The list of variables included in this index and descriptive statistics of their levels and changes are presented in Table A2.

4.2.4 | Change in Opportunity-Enhancing HRM Dimension

Similarly to previous studies (Jiang et al. 2012; Schmidt and Pohler 2018), change in opportunity-enhancing HRM dimension was measured via the time-demeaned value of an "opportunity-enhancing HRM dimension index." The latter index was calculated as the average of 3 standardized indicators, reflecting practices related to empowerment, autonomy, job design, information and knowledge sharing, and communication, so that employees use their skills and motivation to achieve organizational objectives. The main way that we measure opportunity-enhancing practices is based on whether the establishment has received an Investors in People award (https://www.investorsinpeople.com/accreditations/we-invest-in-people/), reflecting national standards of good practice along a number of dimensions. These include: (a) clear communication of managers and employees on roles and objectives, (b) empowering and involving employees, (c) job design that achieves the company's objectives, (d) rewarding and encouraging collaboration, and (e) making sure managers are giving employees everything they need to thrive at work. In addition to this, opportunity-enhancing practices seek to capture whether some firms have made efforts to flatten their positional hierarchies (Delaney and Huselid 1996, 955). We approximate this with the ratios of managerial and nonmanagerial employees and the share of senior care workers to care workers. Finally, there is evidence that in the English ASC sector, these ratios are valid proxies of the extent of monitoring (Shaw et al. 1998) and supervision on the job (Georgiadis 2013), which in turn are associated with the degree of autonomy and empowerment of employees to be involved in decentralized decision making. The list of variables included in this index and descriptive statistics of their levels and changes are presented in Table A2.

4.2.5 | Change in Unit-Level HCR

Given that there is no universally accepted measure of HCR (Zhang et al. 2023), we measured change in unit-level HCR within the organization over time by the time-demeaned value of average

employees' tenure in the organization. This was measured by the average number of years employees have been working in the organization, calculated based on all employees in the establishment with information on tenure (around 92% of all employees, on average; see the following section for details). The justification for the use of this measure is based on two arguments, one general and one context-specific. The general argument is that average tenure has been one of the dominant approaches to operationalizing and measuring HCR in the associated empirical literature (Nyberg et al. 2014; Ployhart et al. 2014) and reflects organization-specific experience, which is an aspect of HCR, explicitly accounted for by the definition of HCR by Ployhart et al. (2009). Moreover, one advantage of this measure relative to other measures used in the literature is that, consistent with the HCR definition, it is a unit-level aggregate of objective measures of individual employee experience (Zhang et al. 2023). The context-specific argument is that higher average tenure allows the formation of meaningful long-term relationships between staff and service users, which are associated with higher quality of care and higher demand for the service (Skills for Care 2022). Moreover, the relationship-specific nature of quality of care associated with higher tenure implies that the latter can be viewed as a VRIN resource (Ployhart et al. 2014). This is in contrast to other KESAOs, which underlie the unit's HCR, such as relevant educational qualifications for the sector, which are homogeneous and standardized (Machin et al. 2003; Vadean and Allan 2021), and thus do not meet the VRIN criterion required for value creation over and above that of competitors (Ployhart et al. 2014). Moreover, higher tenure is also associated with higher continuity in the relationship and familiarity among staff that improves the quality of staff interactions and knowledge of processes and practices; thus, the combination of KESAOs across employees, which underlie the organization's HCR (Ployhart et al. 2014).

4.2.6 | Change in Organizational Staff Turnover

Consistent with previous studies (Batt and Colvin 2011; Jiang et al. 2012), change in employees' turnover was measured by the time-demeaned value of the annual turnover rate, calculated as the ratio of the number of employees who left the establishment, either voluntarily or involuntarily, in the last 12 months to the total number of employees.

4.2.7 | Control Variables

We included a list of variables in all estimated models to control for a range of establishment and workforce characteristics, as well as differences in the source and precision of the worker and establishment-level information across establishments. The set of controls is listed in Table A2. In addition to these, all models included a set of period dummies that aim to control for changes in aggregate economic conditions over time (Bliese et al. 2020). In order to maximize the sample size, we have replaced missing values in some of the controls with the respective sample means and included dummies for missing values in these variables as additional controls in the model. There is evidence that the latter approach is unlikely to affect the validity of our results for two reasons: (i) the share of missing values is small (around 8% of the total sample); and (ii) our main results and conclusions remain robust to alternative methods of imputations, for example, the multiple imputations chained equations (MICE) (see Table A6).

4.3 | Data Analysis

All formulated hypotheses were tested through estimating models via FEIVs that are suitable for panel data (Cameron and Trivedi 2005, 757–758; Wooldridge 2010, 310–311). This is a hybrid estimator, combining FE and IV estimation, which, as discussed in one of the previous sections, has several advantages over other methods employed in the literature and corrects for several sources of endogeneity bias plaguing prior studies, including longitudinal studies, in SHRM (Bliese et al. 2020; Huselid and Becker 1996; Saridakis et al. 2017).

The first advantage of FEIV, for the purposes of our study, is that, similarly to FE, it leverages within-firm variation in all variables by expressing these as deviations from their time-averaged values (time-demeaning) (Bliese et al. 2020; Cameron and Trivedi 2005). In this way, FEIV allows us to operationalize and test longitudinal hypotheses involving relationships among within-firm changes over time in the focal constructs, including HRM dimensions, staff turnover, HCR, and organizational performance (Bliese et al. 2020; Ployhart and Vandenberg 2010). The second advantage of FEIV is that, by leveraging within-firm variation over time, it corrects for endogeneity bias in the estimates of the effects of HRM dimensions, as well as those of mediators, on organizational performance, arising from firm-specific time-invariant unmeasured factors, such as leadership behavior and managerial ability (Bliese et al. 2020; Huselid and Becker 1996; Wooldridge 2010). Third, FEIV corrects for bias plaguing other panel data estimators, such as FE, arising from measurement error (Angrist and Pischke 2009; Huselid and Becker 1996); simultaneity and reverse causality (Wooldridge 2010); common method bias; and firm-specific time-variant shocks across periods that affect HRM dimensions, mediators, and firm performance (Angrist and Pischke 2009; Wooldridge 2010), such as organizational change arising from mergers and acquisitions.

In our case, the latter is achieved through deploying as instruments for endogenous variables, including HRM dimensions, staff turnover, and average tenure, their respective averages among peer establishments, defined as all establishments in the same local authority—there are 317 local authorities, which are lower tier administrative localities, in England –offering the same service. For example, the instrument for change in skill-enhancing HRM dimension index for firm i between period $t-1$ and t is the average change in skill-enhancing HRM dimension index among all firms offering the same service and operating in the same local authority as firm i during the same period, excluding firm i.

Based on recent studies (Bastardoz et al. 2023; Fu et al. 2021), these are expected to be relevant and valid instruments for the endogenous variables. They are expected to be relevant, that is, strongly correlated with endogenous variables, as they reflect market-level HR systems and outcomes—this is based on evidence that adult care market boundaries coincide with that of the local authority, as for the majority of service users, care services are allocated and

funded by local authorities (Skills for Care 2022)—and among peer firms, which recent theoretical and empirical studies identify as important determinants of HRM practices and outcomes at the firm level (Boxall et al. 2019; Gooderham et al. 2019; Jiang et al. 2021). We find evidence supporting this, as we find that the respective market average of each endogenous variable has a positive and strongly significant association with that endogenous variable (see Table A7 for details).

Moreover, these instruments are expected to be valid, that is, uncorrelated with the sources of endogeneity bias discussed above. First, market-level averages of HR variables among peer establishments are expected to be uncorrelated with measurement error in endogenous variables, under the classical measurement error model (Cameron and Trivedi 2005). Second, they are expected to address bias arising from simultaneity and reverse causality, as causality is expected to run from market-level variables to firm-level variables and not vice versa, considering that market-level variables are external to the firm and firms in the sector are too small to influence the market as a whole (Gormley and Matsa 2014; Grieser and Hadlock 2019; Machin et al. 2003). Third, this also implies that the use of these instruments addresses bias from common method variance (Guest 2011; Laaksonen and Peltoniemi 2018; Wright et al. 2005), as estimation leverages market-level variation in the independent variables and mediators, whereas dependent variables are measured at the firm level. Fourth, these instruments are also expected to correct for bias arising from time-variant firm-specific shocks across periods that affect HR practices and outcomes, as well as firm performance because, as explained above, firm-specific shocks are not expected to impact market-level variables.

The FEIV estimator is implemented by estimating the following time-demeaned FE model via two-stage least squares (2SLS) (Cameron and Trivedi 2005; Wooldridge 2010):

$$\ddot{y}_{it} = \beta_0 + \beta_1 \ddot{a}_{it} + \beta_2 \ddot{m}_{it} + \beta_3 \ddot{o}_{it} + \boldsymbol{\beta}_4' \ddot{\boldsymbol{X}}_{\boldsymbol{it}} + \ddot{\varepsilon}_{it} \quad (1)$$

where $\ddot{y}_{it}$, $\ddot{a}_{it}$, $\ddot{m}_{it}$, and $\ddot{o}_{it}$ are the time-demeaned measures of organizational performance, skills-enhancing, motivation-enhancing, and opportunity-enhancing HRM dimensions, respectively; $\ddot{\boldsymbol{X}}_{\boldsymbol{it}}$ is a time-demeaned vector of controls, including time period dummies; $\ddot{\varepsilon}_{it}$ is a time-demeaned error term; β_0, β_1, β_2, and β_3 are coefficients and $\boldsymbol{\beta}_4'$ is a vector of coefficients; and time-demeaned variables are deviations of the variables' levels from their firm-specific averages over time, for example, $\ddot{y}_{it} = y_{it} - \bar{y}_i$, where $\bar{y}_i = \frac{\sum_{t=1}^{T} y_{it}}{T}$. Estimation of Equation (1) via 2SLS entails, in the first stage, regressing each endogenous variable in (1) on the controls in (1), and the instruments (see Table A7); and, in the second stage, estimating Equation (1) via OLS by replacing the endogenous variables with their associated fitted values from the first-stage regressions.

In this way, FEIV leverages the share of within-firm variation over time in the endogenous variables that is predicted by the instruments (Wooldridge 2010). We report the Kleibergen–Paap *F*-statistic (Kleibergen and Paap 2006) that is commonly used to diagnose potential problems associated with weak instruments that render IV estimates invalid (Angrist and Pischke 2009)—the Kleibergen–Paap *F*-statistic is employed when cluster-robust or heteroscedasticity-robust standard errors are used for inferences (see below for details). In our case, where there are multiple endogenous variables and the same number of instruments as endogenous variables, we test for weak instruments using the Stock and Yogo (2005) procedure that entails rejecting the null hypothesis of weak instruments if the Kleibergen–Paap *F*-statistic exceeds the associated critical value. Nevertheless, the latter critical values are not available in our case, with at least three endogenous variables and instruments. Thus, to infer potential problems associated with weak instruments, we adopt a conservative rule of thumb that entails rejecting the null hypothesis of weak instruments if the *F*-statistic is considerably higher than the largest critical value from the Stock and Yogo (2005) table of critical values for the weak instrument test based on 2SLS bias at the 5% level of significance, that is 21.42. In all models, the Kleibergen–Paap *F*-statistics were higher than the latter value, suggesting no concern related to "weak" instruments, which provides further support to the instruments' relevance and the validity of the FEIV estimates. Tests of significance of coefficients were conducted using estimates of cluster-robust standard errors, with clustering at the establishment level, to account for the fact that errors of the same establishment at different periods are correlated (Angrist and Pischke 2009; Wooldridge 2010).

As suggested by the model in Figure A1, testing the hypotheses of interest requires conducting causal sequential mediation analysis. Causal mediation, in addition to addressing endogeneity of the independent variables, requires one to address potential endogeneity of the mediators (Hicks and Tingley 2011; Imai et al. 2011). In our case, endogeneity is dealt with via FEIV estimation that, as discussed above, addresses a range of biases in the effects of both the independent variables and the mediators by eliminating fixed unobserved factors and deploying exogenous variation, generated by the instruments, in both the independent variables and the mediators. Moreover, sequential mediation analysis refers to a model with multiple causally related mediators linking independent variables with the dependent variable (VanderWeele and Vansteelandt 2014). This is the case in the model presented in Figure A1, which postulates that change in staff turnover and change in HCR mediate the effects of changes in HRM dimensions on the change in organizational performance, with change in staff turnover causally impacting change in HCR.

Following VanderWeele and Vansteelandt (2014), the necessary and sufficient conditions for sequential mediation in linear models are an extended version of those required in standard mediation analysis (Baron and Kenny 1986) that also include conditions for mediation between the independent variable and the distal mediator in the causal pathway linking independent variables with the dependent variable. These conditions are as follows: (i) total effects of changes in HRM dimensions on the change in organizational performance are significantly different from zero; (ii) total effects of changes in HRM dimensions on the change in HCR are significantly different from zero; (iii) effects of changes in HRM dimensions on the change in staff turnover are significantly different from zero; (iv) the effect of the change in staff turnover, conditional on changes in HRM dimensions, on the change in strategic HCR is significantly different from zero; (v) the effect of the change in staff turnover,

conditional on changes in HRM dimensions, on the change in organizational performance is significantly different from zero; and (vi) the effect of the change in HCR, conditional on staff turnover and changes in HRM dimensions, on the change in organizational performance is significantly different from zero.

H5, which involves moderation, was tested via estimating an extended specification of Model (1), including interactions of HRM dimension measures with average staff tenure at $t-1$, employing as instruments the interactions of the instruments for each HRM dimension with average staff tenure at $t-1$. We did not use instruments for the latter variable, as the function of the moderator is descriptive, that is, not causal; that is, it aims to "split" the sample, to test whether a relationship differs across different samples, as defined by the value of the moderator (Baron and Kenny 1986; Wooldridge 2010). Moderation was tested by looking at the individual significance of the interaction terms as well as the joint significance of the level and the interaction term for each HRM dimension (Baron and Kenny 1986).

5 | Results

Our detailed results are presented in Tables A3–A5. Table A3 presents descriptive statistics and correlations for all variables used in our analysis. This includes standard deviations for time-demeaned values, but means for time-demeaned values are not presented because they are zero, by construction. This table shows that there is large variability within firms over time in all variables and that this variation accounts for a significant share of the total variance in these variables. Table A4 presents FEIV estimation results of models for the number of service users, staff turnover, and average tenure that aim to test all hypotheses developed, except for H5. Finally, Table A5 includes results of models including interactions of HRM dimensions with average staff tenure in $t-1$, which aim to test H5.

Results of Model 1 in Table A4, where the dependent variable is the natural logarithm of the number of service users at the establishment, show positive and strongly significant total associations between each HRM dimension and the number of service users. This provides support to H1, H2, and H3 positing that increases in HRM dimensions of a given organization will be associated with an increase in the organization's (operational/financial) performance over time. Estimated coefficients in model 1 of Table A4 suggest that a one-unit increase (above the establishment-specific average between two consecutive 6-month periods) in the skill-enhancing, motivation-enhancing, and opportunity-enhancing HRM dimension index is associated with a 4%, 3.1%, and 1.8% increase in the number of service users, respectively, above the establishment-specific average in the same period.

Moreover, Model 2 in Table A4, where the dependent variable is the natural logarithm of average tenure (at time t) of employees in the establishment, indicates positive and strongly significant associations of the three HRM dimensions with average tenure. This supports a significant relationship between changes in HRM dimensions and change in the distal mediator in the pathway linking changes in HRM dimensions and change in organizational performance.

Model 3 in Table A4 presents estimation results of the model for staff turnover, with coefficient estimates suggesting a positive and significant association of skill-enhancing HRM dimension, a negative and significant association of motivation-enhancing HRM dimension, and an insignificant association of opportunity-enhancing HRM dimension on staff turnover rate.

Model 4 in Table A4, which includes coefficient estimates of a model that extends Model 2 by including staff turnover among the predictors of average tenure, indicates a negative and significant association of staff turnover with average tenure. The latter result is in line with our analysis in the hypotheses development section highlighting that increases in staff turnover, under certain conditions, deplete the HCR stock of the organization. Taken together, the results of Models 2–4 provide support H6 positing that change in staff turnover mediates the relationship between changes in skill-enhancing and motivation-enhancing HRM dimensions, but not of change in opportunity-enhancing HRM dimension, and change in HCR.

Finally, Models 5 and 6 in Table A4 are extensions to Model 1. Model 5 extends Model 1 by including staff turnover among the predictors of the logarithm of the number of service users, whereas Model 6 extends Model 1 by including staff turnover and average tenure as predictors. Estimation results of Model 5 show a positive and significant association of staff turnover with the number of service users, whereas estimates of Model 6 suggest a positive and significant association of average tenure with the number of service users.

Taken together, the results of Models 1, 2, and 6 support H4 that change in HCR mediates the relationship between changes in HRM dimensions and change in organizational performance. Moreover, the combined results of all models in Table A4 support that change in staff turnover and change in HCR sequentially mediate the relationship between changes in HRM dimensions and change in organizational performance.

Comparing coefficient estimates of the three HRM dimensions in Model (1), presenting total effects, and their estimates in Model (6), presenting direct effects, one can infer that the latter effects are larger than the indirect effects of HRM dimensions on organizational performance.

Moving to Table A5, the results in Model 1 show that level coefficients of HRM dimensions remain positive and strongly significant when their interactions with average staff tenure in $t-1$ are included in the model. Moreover, the table shows that the coefficients of the interactions of skill-enhancing and motivation-enhancing HRM dimensions have a negative sign, with the former being significant and the latter being insignificant. Although the latter result may suggest that H5 is supported for the skill-enhancing dimension, the joint significance of the level and interaction coefficients of the skill-enhancing and motivation-enhancing HRM dimensions provides support H5 for both these dimensions. This is illustrated in Figures A2 and A3, which present estimates of total effects, evaluated at different values of lagged one-period average staff tenure in the sample, and their associated 95% confidence intervals. Both figures reveal a similar pattern: effects of skill- and motivation-enhancing HRM dimensions on organizational performance are

positive and significant at low values of lagged average staff tenure; they decrease as lagged average staff tenure increases; and become not significantly different from zero above a threshold value of lagged average staff tenure. Figures A4 and A5 present further results supporting H5 by showing that the estimated longitudinal relationship between the skill- and motivation-enhancing HRM dimensions and organizational performance, respectively, has a steeper positive slope at low values of lagged average staff tenure.

6 | Discussion and Conclusion

Our study develops hypotheses on the pathway linking HRM dimensions and organizational performance over time and tests these hypotheses using unique panel data and relevant estimation methods. The first contribution of this study is theoretical and conceptual as it develops a framework that draws on, and supplements, dynamic HCR theory (Helfat and Peteraf 2003; Ployhart et al. 2009) by articulating the mechanisms via which changes in HRM architecture within organizations over time lead to changes in organizational performance. This has received less attention in the literature (Kim and Ployhart 2014; Piening et al. 2013). Our framework extends dynamic HCR theory by introducing HRM dimensions of practices and posits that increased investments in HRM dimensions within organizations over time can lead to increases in organizational performance via generating HCR inflows that help maintain the HCR stock, which is the source of SCA. One novel feature of our framework is the delineation of the time-related processes that deplete the organization's HCR stock and erode SCA, which are counteracted by HRM dimensions. One such factor is staff turnover, which is conceptualized as a mediator of the HRM-HCR link over time, rather than an outcome of HCR, as posited by existing static theories of SHRM (Batt and Colvin 2011; Jiang et al. 2012). Another novel feature of our framework is that HRM effects on performance over time are postulated to be heterogeneous, with the heterogeneity being time/path-dependent, and, in particular, depending on the initial HCR stock.

Our second contribution is methodological and empirical and is based on testing the hypothesized longitudinal relationships postulated by the conceptual framework through deploying large, representative, matched employer–employee, high-frequency panel data from the English ASC sector; and FEIV estimation. The latter leverages within-firm variation over time in the measures of the focal constructs and allows us to address several of the sources of endogeneity bias plaguing prior empirical studies of the HRM-performance relationship, including bias associated with omitted variables, simultaneity, measurement error, and common method variance. In this way, our chosen method brings us closer to causal inferences on the inter-relationship among HRM dimensions, staff turnover, HCR stock and flows, and organizational performance.

Our empirical results support the formulated hypotheses that increased investments in skill-enhancing, motivation-enhancing, and opportunity-enhancing HRM dimensions at any given organization over time lead to an increase in the organization's sales volume and revenue. We also find that the latter effects manifest via increases in the organization's HCR stock, which, in the case of skill-enhancing and motivation-enhancing HRM dimensions, are partly achieved via decreases in staff turnover and are heterogeneous across firms and decrease with the level of the initial HCR stock.

6.1 | Theoretical Implications

These findings have implications for theory as they establish that HRM dimensions drive organizational performance over time and that the underlying theoretical mechanism is consistent with a dynamic RBV/HCR rationale. This involves HCR flows as mediators of the HRM-performance link, and initial HCR stock—reflecting path dependence, a key property of VRIN resources in the RBV—as a moderator that determines the strength of the link. This further implies that static theories of SHRM postulating a monotonic and homogeneous HRM-performance relationship are unlikely to provide good approximations of the nature of the HRM-performance link over time.

Moreover, further theoretical implications arise from our empirical approach, which not only makes a methodological contribution. In particular, our approach via addressing omitted variables bias, measurement error, and reverse causality rules out a number of alternative theoretical explanations/views of the longitudinal HRM-performance link put forth by previous studies including (a) that the link reflects unmeasured differences in managerial ability and leadership behavior (Schmidt and Pohler 2018; Wright et al. 2005); (b) that there is a null, that is, small and trivial, relationship between HRM and performance over time (Ogbonnaya et al. 2023); (c) and that the relationship reflects effects running from performance to HRM (Ogbonnaya et al. 2023; Shin and Konrad 2017; Wright et al. 2005).

6.2 | Practical Implications

Even though our results are drawn from data from the English ASC sector, like other country-specific sectoral studies (e.g., Batt and Colvin 2011; Garmendia et al. 2021), we believe that they have generalisable implications for theory as above, and also for managerial practice and public policy. The strong evidence produced, highlight that increased investments in staff training, improved pay, and career pathways to promotion and permanent contracts in the health and care sector could address temporary or persistent poor performance, as reflected in low sales volume and revenue, and arising from degradation of skills associated with high staff turnover and low organizational competitiveness (Cooke and Bartram 2015). Nevertheless, our findings temper unrealistic managerial expectations and suggest that investment in training and rewards practices is not a panacea for improving organizational sales volume and revenue over time. Instead, we argue that they are more likely to be effective in "low road" organizations (Osterman 2018) which are characterized by poor competitiveness and performance arising from staff skills degradation. Hence, they may not boost performance among high-performing organizations with already highly-skilled and experienced employees and instead, other interventions might be needed. Even in cases where these practices promote organizational performance, there is a limit in the extent to which this can persist over time, as their effectiveness is expected to reduce after a threshold level of collective staff

skills, knowledge, and experience is reached. These findings are also likely to be generalisable to other sectors with similar characteristics. For example, sectors that are highly regulated in terms of their prices; have low surplus/profit margins; rely on personal services/customer interactions; and/or rely on a workforce that is predominantly low-skilled and low paid (e.g., hospitality and retail sector). More broadly, the results suggest that firms trapped in "low road" HRM practices (Osterman 2018) can especially benefit from investment in motivation-enhancing and skill-enhancing HR practices and should expect to see considerable improvements in their organizational performance.

6.3 | Limitations

Admittedly, our study has some limitations that motivate future research avenues in the area. Although our dataset offers information on several variables of interest, our operationalisation of HCR was based on organization-specific experience, as captured by organizational tenure (Ployhart et al. 2014). While this is a limitation, as this measure does not cover other aspects of HCR, it was chosen because there is no universally accepted measure of HCR (Zhang et al. 2023) and it represents one common operationalisation of HCR in the literature, which is also relevant for the sectoral context of our study. In addition to this, our measures of motivation-enhancing HRM practices did not include measures of performance-related pay systems (Kornelakis et al. 2016), as these were not particularly prevalent in the specific sectoral context. Finally, another limitation was that opportunity-enhancing HRM practices did not include information on aspects of teamwork and employee voice, which are usually part of high-performing practices (Kornelakis et al. 2016), and our measure of turnover did not discriminate between voluntary and involuntary exits. Despite the above limitations characterizing our measures, we believe that FEIV estimation mitigates some of these potential problems. Finally, there is evidence supporting the validity of our results, as according to recent studies, the use of imperfect measures yields weaker correlations between the key constructs (Zhang et al. 2023), which implies that our main findings would hold more strongly in the case that better measures were available. Another limitation of our study relates to the fact that our estimation method does not correct all potential biases associated with time-variant omitted variables. This, however, is in line with Wright et al. (2005) and Schmidt and Pohler (2018), who highlight that it is not possible for a single study to address the numerous sources of biases in estimation.

6.4 | Future Research

Our findings have implications for future research. Future studies that examine the dynamic pathway linking HRM and performance should integrate *path-dependence* and the dynamics of *depletion* and *accumulation* of HCR stock in their conceptual and empirical models. Additionally, future empirical research should aim to employ richer data sets that will allow addressing the above problems in measurement and operationalisation. For instance, improved measures of HCR should cover more HCR dimensions, such as skills, abilities, and other characteristics (e.g., personality traits) and include a larger and more comprehensive set of items per dimension. Furthermore, we believe that experimental designs, considered the gold standard for drawing causal inferences, could be difficult to implement in SHRM due to several constraints (Podsakoff and Podsakoff 2019). Yet, we strongly advocate for the use of quasi-experimental designs, which in several cases approximate well the experimental ideal (Author 1b; Podsakoff and Podsakoff 2019). Indeed, we believe that methods for drawing causal inferences from non-experimental data, such as FEIV that we use in this article, can push further the frontiers of our knowledge. We also note that our results reflect contemporaneous effects of HRM dimensions on performance; thus, further studies could articulate the extent to which these effects persist over time and, if so, for how long (Piening et al. 2013). This can be at the core of a research agenda of how organizations can build sustainable competitive advantage over time through HRM practices (Wright and Mcmahan 2011) and how to successfully make the transition from "low road" (Osterman 2018) to "high road" employment practices.

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Conflicts of Interest

The authors declare no conflicts of interest.

Data Availability Statement

The data that support the findings of this study are available from Skills for Care.

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Appendix A

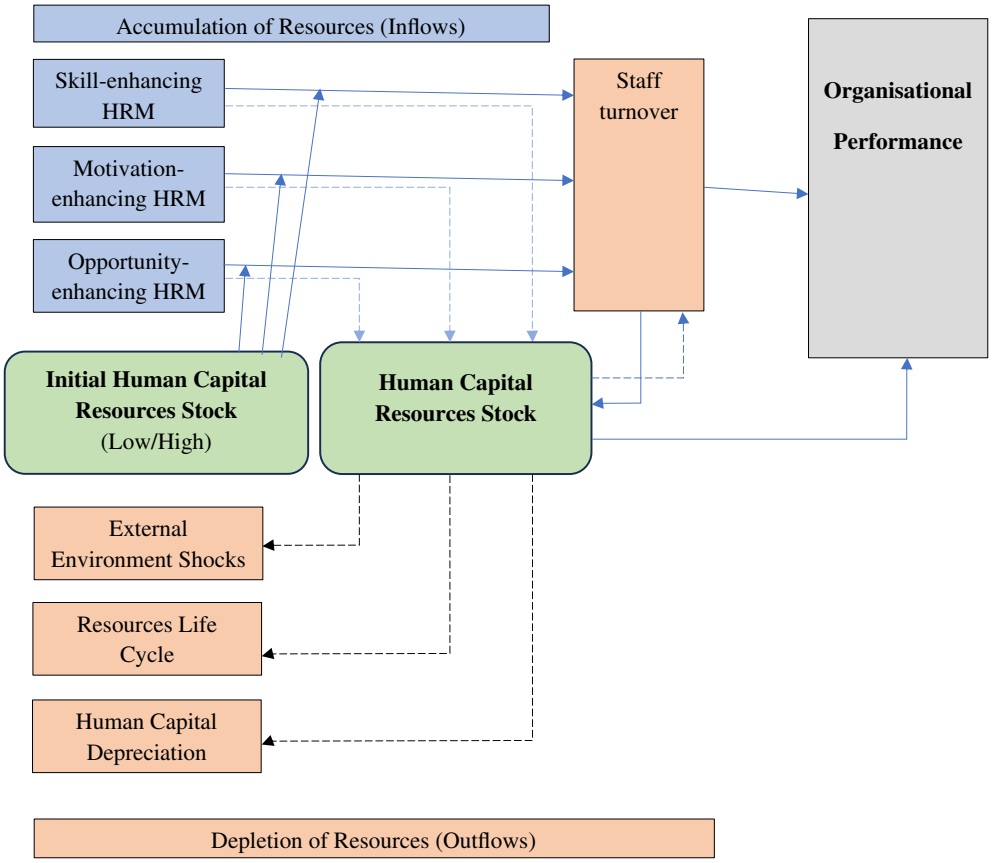

FIGURE A1 | Relationships among changes in HRM dimensions, human capital resources, staff turnover, and organizational performance. The dashed arrows represent broadly conceptualized inflows and outflows. The line arrows represent relationships between associated constructs. All constructs refer to changes between time *t*−1 and *t*, whereas the initial human capital stock represents the construct at time *t*−1.

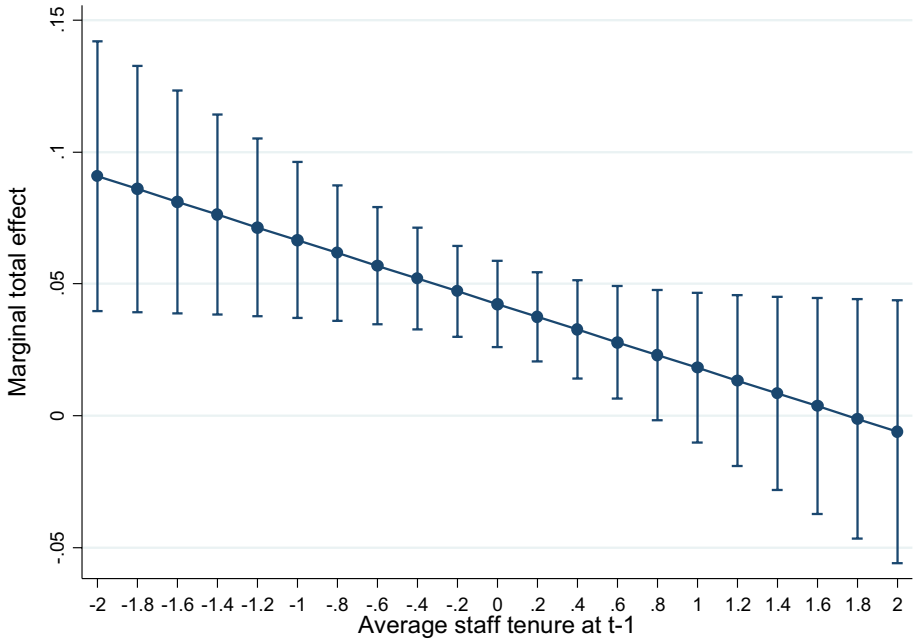

FIGURE A2 | Total effects of increases in skill-enhancing HRM dimension on organizational performance at different values of initial unit level human capital resources stock. Coefficient estimates and 95% confidence intervals. Average staff tenure is measured as deviation from the firm-specific long-run average.

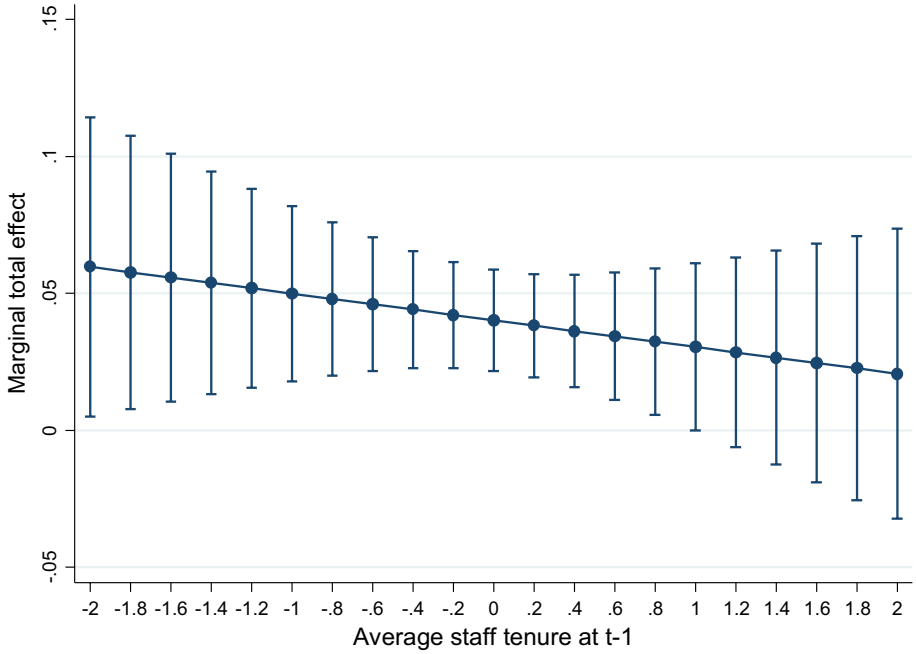

FIGURE A3 | Total effects of increases in motivation-enhancing HRM dimension on organizational performance at different values of initial unit level human capital resources stock. Coefficient estimates and 95% confidence intervals. Average staff tenure is measured as deviation from the firm-specific long-run average.

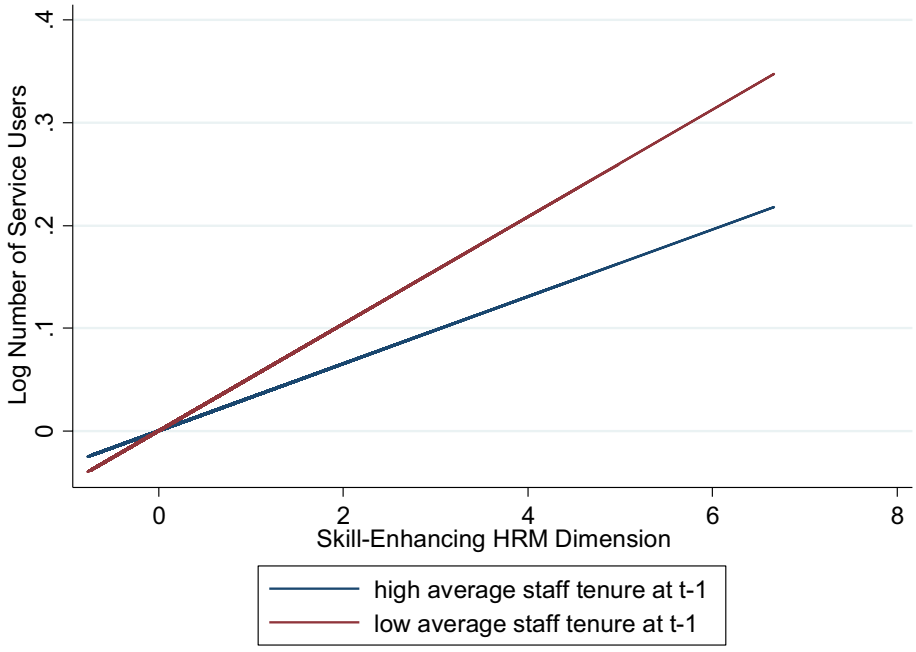

FIGURE A4 | The longitudinal relationship between organizational performance and the skill-enhancing HRM dimension. High and low average staff tenure at $t-1$ are 2 standard deviations above and below the mean, respectively.

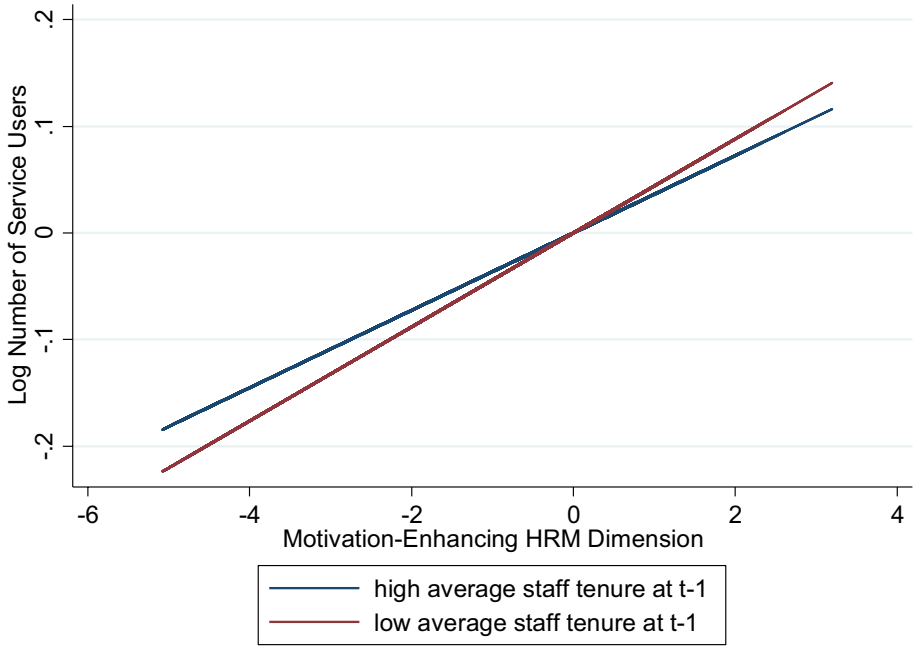

FIGURE A5 | The longitudinal relationship between organizational performance and the motivation-enhancing HRM dimension. High and low average staff tenure at *t*−1 are 2 standard deviations above and below the mean, respectively.

TABLE A1 | Summary of longitudinal Studies in SHRM.

Study	Journal	Method	Findings	Limitations
Birdi et al. (2008)	*Personnel Psychology*	308 manufacturing companies over 22 years; hierarchical linear modeling	Small positive and significant effects of training and empowerment practices on performance	Leverage both within- and between-firms' variation in HRM; do not address biases arising from omitted variables, measurement, error, and reverse causality
Diaz-Fernandez et al. (2017)	*International Journal of Manpower*	1363 firms over 8 years; Generalized Method of Moments (GMM)	Positive and significant effects of employment security on labor productivity	Diagnostic test results fail to provide support to the exogeneity condition necessary for their method to address biases arising from omitted variables, measurement, error, and reverse causality
Garmendia et al. (2021)	*Human Resource Management Journal*	94 retail stores over two periods; Cross-Lagged Modeling (CLM)	A negative and significant effect of High-Performance Work Systems (HPWS) on productivity	Leverage between-firm variation in HRM; do not address biases arising from omitted variables, measurement, error, and reverse causality
Huselid and Becker (1996)	Industrial Relations	218 firms over two periods; fixed effects with measurement error correction	A small positive effect of HRM index on Tobin's *q*	Does not address bias from reverse causality and time-invariant omitted variables
Kim and Ployhart (2014)	*Journal of Applied Psychology*	359 firms over 12 years; Random Coefficients Growth Modeling (RCGM)	Significant positive effects of staffing and training practices on profitability	Leverage between-firm variation in HRM; do not address biases arising from omitted variables, measurement, error, and reverse causality
Li et al. (2018)	*Academy of Management Journal*	2639 establishments from the 2005 to 2006 waves of the Workplace and Employee Survey (WES) Canada; ordered probit regression	Positive and significant effect of High-Performance Work Systems (HPWS) on Innovation	Time-lagged (no repeated measures of HRM over time); do not address biases arising from omitted variables, measurement, error, and reverse causality
Ogbonnaya et al. (2023)	*Journal of Management Studies*	160 English National Health Service (NHS) trusts over four periods; Cross-Lagged Modeling (CLM)	No significant effect of HRM practices on patients' satisfaction	Leverage between-firm variation in HRM; do not address biases arising from omitted variables, measurement, error, and reverse causality
Piening et al. (2013)	*Journal of Applied Psychology*	169 English National Health Service (NHS) trusts over five periods; System GMM	A significant positive effect of Employees' perceptions of the HRM system on customers' satisfaction	Hypotheses and measures are about employees' perceptions of the organization's HR system; sample of public sector establishments
Aït Razouk (2011)	*International Journal of Human Resource Management*	275 firms over two periods; linear regression, controlling for lagged performance	A significant positive effect of HPWS on profitability	Leverage between-firm variation in HRM; do not address biases arising from omitted variables, measurement, error, and reverse causality
Schmidt and Pohler (2018)	*Journal of Applied Psychology*	80 business units observed over eight periods; Covariate Balance Propensity Score (CPBS)	No significant effect of HPWS on customer satisfaction	Leverage both within- and between-units' variation in HRM; do not address biases arising from omitted variables, measurement, error, and reverse causality
Sheehan (2014)	*International Small Business Journal*	336 firms over two periods; linear regression, controlling for lagged performance	A significant positive effect of HRM index on subjective financial performance measure	Leverage between-firm variation in HRM; do not address biases arising from omitted variables, measurement, error, and reverse causality
Shin and Konrad (2017)	*Journal of Management*	2228 establishments from the 2001, 2003, and 2005 waves of the Workplace and Employee Survey (WES) Canada; longitudinal CLM	A significant positive effect of HPWS on productivity	Leverage both within- and between-units' variation in HRM; do not address biases arising from omitted variables, measurement, error, and reverse causality

TABLE A2 | Descriptive statistics of variables included in skill-enhancing, motivation-enhancing, and opportunity-enhancing HRM indices.

Variable	Level		Time-demeaned
	Mean	S.D.	S.D.
Skill-enhancing HRM practices index			
Share of employees achieving educational qualification in the current employer	0.23	0.25	0.11
Number of educational qualifications achieved in the current employer	0.36	0.52	0.22
Level of the highest educational qualification achieved in the current employer	1.11	1.78	1.69
Share of employees achieving qualification relevant to social care in the current employer	0.22	0.25	0.11
Number of qualifications relevant to social care achieved in the current employer	0.35	0.50	0.21
Level of the highest qualification relevant to social care achieved in the current employer	1.14	1.80	1.70
Share of employees currently working toward an educational qualification	0.08	0.14	0.07
Number of educational qualifications employees are currently working toward	0.08	0.16	0.08
Level of the highest educational qualification employees are currently working toward	2.02	2.77	2.42
Share of employees currently working toward a qualification relevant to social care	0.24	0.35	0.27
Number of qualifications relevant to social care employees are currently working toward	0.08	0.16	0.08
Level of the highest qualification relevant to social care employees are currently working toward	2.02	2.77	2.42
Share of employees received training in the current employer	0.26	0.40	0.22
Number of trainings received in the current employer	1.40	2.87	1.73
Share of employees received induction training in the current employer	0.61	0.39	0.13
Share of employees recruited from other adult social care providers	0.58	0.37	0.12
Motivation-enhancing HRM practices index			
Difference in log hourly pay at the establishment and average log hourly pay in other establishments in the locality by occupation	−0.01	0.17	0.07
Difference between the maximum and the average hourly pay for each occupation at the current employer	0.13	0.17	0.10
Share of employees with permanent contracts	0.89	0.19	0.08
Share of full-time employees	0.91	0.17	0.08
Share of employees achieving promotion	0.56	0.29	0.11
Share of employees on a zero-hours contract	0.01	0.07	0.06
Share of employees working more than 40 h a week	0.05	0.17	0.05
Share of employees working more than their contractual hours	0.15	0.28	0.13
Share of noncontractual hours in total weekly hours	0.05	0.13	0.05
Opportunity-enhancing HRM practices index			
Investors in people award	0.50	0.48	0.13
Share of managerial to nonmanagerial employees	0.12	0.19	0.09
Share of senior care workers to care workers	0.16	0.24	0.11

Note: Number of business units: 30,780; number of periods: 10; number of observations: 200,545. Means of time-demeaned variables are not presented, as they are zero, by construction. There are four levels of qualifications in social care. Training is provided across 24 areas of work, such as first aid, health and safety, food and safety catering, and dementia. The share of employees recruited from other adult social care providers aims to capture the extent to which the establishment improves the quality of its human capital pool through the recruitment of employees with relevant previous experience. The Investors in People award is awarded by the government to employers who meet national standards of good practice along a number of dimensions, including (a) clear communication of managers and employees on roles and objectives, (b) empowering and involving employees, (c) job design that achieves the company's objectives, (d) rewarding and encouraging collaboration, and (e) making sure managers are giving employees everything they need to thrive at work (see https://www.investorsinpeople.com/accreditations/we-invest-in-people/).

TABLE A3 | Descriptive statistics and correlations.

Variable	Mean	S.D. (level)	S.D. (time-demeaned)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1. Number of service users	44.96	171.91	78.69																	
2. Average tenure	5.70	4.09	1.41	−0.06																
3. Staff turnover rate	0.19	0.24	0.15	0.03	−0.17															
4. Skill-enhancing HR index	0.00	0.54	0.31	−0.01	0.14	0.08														
5. Motivation-enhancing HR index	0.00	0.45	0.23	−0.05	0.01	−0.03	0.04													
6. Opportunity-enhancing HR index	0.03	0.68	0.31	−0.09	0.16	−0.07	0.00	0.08												
7. Number of employees	35.76	50.86	15.12	0.35	−0.10	0.06	−0.04	−0.10	−0.15											
8. Part of larger organization	0.60	0.49	0.08	−0.06	0.25	−0.11	−0.17	−0.11	0.11	−0.12										
9. Regulated	0.70	0.46	0.10	0.10	−0.26	0.14	0.14	0.09	−0.18	0.20	−0.37									
10. Private	0.53	0.5	0.07	0.12	−0.37	0.17	0.13	0.16	−0.21	0.14	−0.50	0.50								
11. Residential	0.50	0.5	0.10	−0.10	−0.07	0.06	0.11	0.22	−0.06	−0.01	−0.15	0.45	0.36							
12. Average age	43.82	5.81	2.06	−0.05	0.48	−0.15	−0.02	−0.06	0.13	−0.11	0.18	−0.27	−0.38	−0.18						
13. White	0.83	0.25	0.06	0.00	0.09	0.02	0.02	0.05	0.03	−0.01	0.02	−0.02	−0.04	−0.04	0.05					
14. Female	0.80	0.19	0.07	0.08	−0.04	0.05	0.04	−0.04	−0.11	0.08	−0.14	0.17	0.13	0.06	−0.01	0.12				
15. UK-born	0.78	0.28	0.06	0.02	0.06	−0.01	0.05	0.05	0.04	−0.04	−0.04	−0.06	−0.07	−0.11	0.06	0.57	0.10			
16. Establishment records	0.51	0.48	0.07	0.05	−0.30	0.14	0.20	0.17	−0.11	0.06	−0.68	0.44	0.51	0.25	−0.25	−0.03	0.13	0.08		
17. Share of employees with information	0.92	0.21	0.11	−0.01	0.12	0.03	0.04	−0.08	0.08	0.02	0.30	−0.14	−0.19	−0.03	0.09	0.07	−0.03	0.02	−0.26	

Note: Number of business units: 30,780; number of periods: 10; number of observations: 200,545; correlations larger than 0.02 are significant at the 1% level.

TABLE A4 | Fixed effects instrumental variables (FEIV) estimates of models of number of service users, staff turnover, and average tenure.

	Log number of service users	Log average tenure	Staff turnover rate	Log average tenure	Log number of service users	Log number of service users
	(1)	(2)	(3)	(4)	(5)	(6)
Log average tenure						0.032***
						(0.009)
Staff turnover rate				−0.018***	0.064***	0.065***
				(0.006)	(0.010)	(0.010)
Skill-enhancing HRM index	0.040***	0.186***	0.016***	0.186***	0.039***	0.033***
	(0.008)	(0.005)	(0.003)	(0.005)	(0.008)	(0.008)
Motivation-enhancing HRM index	0.031***	0.026***	−0.009***	0.025***	0.032***	0.031***
	(0.009)	(0.004)	(0.003)	(0.004)	(0.009)	(0.009)
Opportunity-enhancing HRM index	0.018***	0.034***	0.003	0.034***	0.018***	0.017***
	(0.005)	(0.004)	(0.002)	(0.004)	(0.005)	(0.005)
Kleibergen–Paap *F*-statistic	1248	1248	1248	937	937	103
Number of observations	198,524	198,524	198,524	198,524	198,524	198,524

Note: Standard errors clustered at the establishment level in parentheses; all models include the following controls: log number of employees, share female, share white, dummies for whether the establishment is part of a larger organization (parent, subsidiary, single independent establishment), dummies for sector (private, public, or charity), dummies for type of service (residential, domiciliary, or community care), dummies for how the data records were created (parent registration, admin registration, self-registration), dummies for time period. Instruments for skill-enhancing HRM, motivation-enhancing HRM, opportunity-enhancing HRM, log average tenure, and staff turnover rate are their respective averages among peer firms in the same locality.

*$p < 0.10$.

**$p < 0.05$.

***$p < 0.01$.

TABLE A5 | Fixed effects instrumental variables (FEIV) estimates of models of number of service users, staff turnover, and average tenure (with interaction terms).

	Log number of service users	Log average tenure	Staff turnover rate	Log average tenure	Log number of service users	Log number of service users
	(1)	(2)	(3)	(4)	(5)	(6)
Log average tenure						0.021**
						(0.010)
Staff turnover rate				−0.024***	0.060***	0.061***
				(0.007)	(0.011)	(0.011)
Skill-enhancing HRM index	0.042***	0.198***	0.016***	0.199***	0.041***	0.037***
	(0.008)	(0.006)	(0.003)	(0.006)	(0.008)	(0.009)
Motivation-enhancing HRM index	0.040***	0.033***	−0.008**	0.032***	0.041***	0.040***
	(0.009)	(0.004)	(0.003)	(0.004)	(0.009)	(0.009)
Opportunity-enhancing HRM index	0.020***	0.032***	0.006**	0.032***	0.020***	0.019***
	(0.006)	(0.004)	(0.002)	(0.004)	(0.006)	(0.006)
Skill-enhancing HRM index × log average tenure (t−1)	−0.024**	−0.180***	−0.023***	−0.181***	−0.023*	−0.019
	(0.012)	(0.019)	(0.006)	(0.019)	(0.012)	(0.012)
Motivation-enhancing HRM index × log average tenure (t−1)	−0.010	−0.069***	−0.001	−0.069***	−0.010	−0.008
	(0.013)	(0.015)	(0.006)	(0.015)	(0.013)	(0.013)
Opportunity-enhancing HRM index × log average tenure (t−1)	0.006	0.099***	−0.002	0.099***	0.006	0.004
	(0.009)	(0.010)	(0.004)	(0.010)	(0.009)	(0.009)
Kleibergen–Paap F-statistic	526	526	526	451	451	389
Number of observations	166,469	166,469	166,469	166,469	166,469	166,469

Note: Standard errors clustered at the establishment level in parentheses; all models include the following controls: log number of employees, share female, share white, dummies for whether the establishment is part of a larger organization (parent, subsidiary, single independent establishment), dummies for sector (private, public, or charity), dummies for type of service (residential, domiciliary, or community care), dummies for how the data records were created (parent registration, admin registration, self-registration), dummies for time period. Instruments for skill-enhancing HRM, motivation-enhancing HRM, opportunity-enhancing HRM, log average tenure, and staff turnover rate are their respective averages among peer firms in the same locality. Instruments for the interactions of HRM dimensions with log average tenure (t−1) are the interactions of the instruments for HRM dimensions with log average tenure (t−1).

*$p < 0.10$.

**$p < 0.05$.

***$p < 0.01$.

TABLE A6 | Fixed effects instrumental variables (FEIV) estimates of models of number of service users, staff turnover, and average tenure (with multiple imputations of missing values).

	Log number of service users	Log average tenure	Staff turnover rate	Log average tenure	Log number of service users	Log number of service users
	(1)	(2)	(3)	(4)	(5)	(6)
Log average tenure						0.028***
						(0.009)
Staff turnover rate				−0.019***	0.074***	0.074***
				(0.006)	(0.009)	(0.010)
Skill-enhancing HRM index	0.037***	0.189***	0.015***	0.190***	0.036***	0.031***
	(0.008)	(0.005)	(0.003)	(0.005)	(0.008)	(0.008)
Motivation-enhancing HRM index	0.023***	0.028***	−0.010***	0.027***	0.024***	0.023***
	(0.009)	(0.004)	(0.003)	(0.003)	(0.008)	(0.008)
Opportunity-enhancing HRM index	0.017***	0.037***	0.003	0.037***	0.017***	0.015***
	(0.005)	(0.004)	(0.002)	(0.003)	(0.005)	(0.005)
Kleibergen–Paap *F*-statistic	1248	1248	1248	937	937	103
Number of observations	198,524	198,524	198,524	198,524	198,524	198,524

Note: Standard errors clustered at the establishment level in parentheses; missing values were imputed using the multiple imputations chained equations (MICE) method; all models include the following controls: log number of employees, share female, share white, dummies for whether the establishment is part of a larger organization (parent, subsidiary, single independent establishment), dummies for sector (private, public, or charity), dummies for type of service (residential, domiciliary, or community care), dummies for how the data records were created (parent registration, admin registration, self-registration), dummies for time period. Instruments for skill-enhancing HRM, motivation-enhancing HRM, opportunity-enhancing HRM, log average tenure, and staff turnover rate are their respective averages among peer firms in the same locality.

*$p < 0.10$.

**$p < 0.05$.

***$p < 0.01$.

TABLE A7 | First-stage results of FEIV estimation.

	Models (1), (2), and (3) of Table A3			Models (4) and (5) of Table A3				Model (6) of Table A3				
	Skill-enhancing HR dimension index	Motivation-enhancing HR dimension index	Opportunity-enhancing HR dimension index	Staff turnover rate	Skill-enhancing HR dimension index	Motivation-enhancing HR dimension index	Opportunity-enhancing HR dimension index	Log average tenure	Staff turnover rate	Skill-enhancing HR dimension index	Motivation-enhancing HR dimension index	Opportunity-enhancing HR dimension index
Average log average tenure in locality								0.444***	0.012*	−0.027**	−0.010	−0.031**
								(0.014)	(0.006)	(0.011)	(0.010)	(0.015)
Average staff turnover rate in locality				0.829***	−0.068**	0.021	0.029	0.069***	0.833***	−0.077**	0.018	0.019
				(0.022)	(0.030)	(0.028)	(0.040)	(0.026)	(0.022)	(0.030)	(0.028)	(0.040)
Average skill-enhancing HR dimension index in locality	0.742***	−0.044***	0.050***	−0.011	0.742***	−0.045***	0.050***	0.048***	−0.015*	0.751***	−0.041***	0.060***
	(0.015)	(0.012)	(0.017)	(0.008)	(0.015)	(0.012)	(0.017)	(0.012)	(0.008)	(0.016)	(0.012)	(0.018)
Average motivation-enhancing HR dimension index in locality	−0.020	0.630***	0.024	0.007	−0.021	0.630***	0.024	−0.016	0.005	−0.017	0.631***	0.028
	(0.013)	(0.017)	(0.019)	(0.008)	(0.013)	(0.017)	(0.019)	(0.012)	(0.008)	(0.013)	(0.017)	(0.019)
Average opportunity-enhancing HR dimension index in locality	0.044***	0.018	0.657***	−0.001	0.044***	0.019	0.657***	−0.030***	−0.000	0.043***	0.018	0.656***
	(0.011)	(0.012)	(0.022)	(0.007)	(0.011)	(0.012)	(0.022)	(0.011)	(0.007)	(0.011)	(0.012)	(0.022)
Partial F-statistic	1305	1602	1331	405	962	1205	890	468	330	823	1004	717
Observations	198,524	198,524	198,524	198,524	198,524	198,524	198,524	198,524	198,524	198,524	198,524	198,524

Note: Standard errors clustered at the establishment level in parentheses; all models are estimated via fixed effects and include the following controls: log number of employees, dummies for whether the establishment is part of a larger organization (parent, subsidiary, single independent establishment), a dummy for whether the establishment is regulated by the Care Quality Commission (CQC), dummies for sector (private, public, or charity), dummies for type of service (residential, domiciliary, or community care), log number of employees, average employees' age, share white, share female, share UK-born, dummies for the source of establishment information (establishment or organization record), share of employees with individual information, dummies for time period, and dummies for missing values in whether the establishment is regulated by the CQC, share white, share female, share UK-born, the source of establishment information, and share of employees with individual information. Averages for skill-enhancing, motivation-enhancing, and opportunity-enhancing HR dimension indices, as well as for log average tenure and staff turnover rate are based on peer firms in the same local authority.

*$p < 0.10$.

**$p < 0.05$.

***$p < 0.01$.