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High-involvement HRM and innovative behaviour: The mediating roles of nursing staff's autonomy and affective commitment

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Abstract

Aims: The purpose of this paper was to investigate the relationship between high-involvement human resource management, autonomy, affective organisational commitment and innovative behaviours of nursing staff who care for elderly clients.

Background: Nursing teams are increasingly required to demonstrate innovative behaviours that enhance care quality. Nursing leaders need to create environments where nursing staff have sufficient autonomy and feel a sense of commitment to support these behaviours. The appropriate implementation of these processes and practices may lead to greater involvement.

Methods: A cross-sectional survey-based research design was employed to explore the experiences of involvement practices, autonomy, affective organisational commitment and innovative behaviours of 567 nursing staff workers from four elderly care organisations in the Netherlands.

Results: The results demonstrate that a bundle of high-involvement practices positively influences innovative behaviour and that affective commitment and autonomy fully mediate this relationship.

Conclusions: The study highlights the role of autonomy and commitment as routes towards translating involvement practices into nurses' innovativeness.

Implications for Nursing Management: To create an innovative environment, leaders need to create a positive climate by providing nurses with opportunities to enhance their competence, relatedness and autonomy through active involvement. Leaders should, therefore, encourage involvement as a mechanism to promote innovation.

KEYWORDS

affective Commitment, autonomy, high-involvement, human resource management, innovative work behaviour

1 | INTRODUCTION

In ageing societies, innovation is crucial for elderly[1] care organisations to improve patient outcomes (WHO, 2002). To increase innovation performance, nurses and their creativity play a vital role (Institute of Medicine, 2010; Verleye & Gemmel, 2011; Yan, et al.,l., 2020). These 'innovative work behaviours' are defined as developing and implementing new ideas to optimize workflow and solve problems within organisations (Janssen, 2000). Nursing management scholars have recognized the importance of frontline health care workers as a source of innovation (McSherry & Douglas, 2011; Wang et al., 2019). Nurses' innovative behaviours are essential to achieve organisational goals and improve the quality of care (Knol & Van Linge, 2009). However, for most nurses, innovative behaviours are extra-role behaviours that are *discretionarily* enacted if the right conditions are present (Agarwal, 2014). In elderly care, where these extra-role behaviours are difficult to cultivate given the high demands, employees need to demonstrate these behaviours to improve clinical and nursing practices. For those reasons, it is essential to understand the factors that enhance these innovative behaviours and do so by integrating insights from both the human resources and nursing management literature.

To study how leaders in nursing can increase innovative behaviours, we argue that these extra-role behaviours should be seen as a function of both internal experiences and external resources. Three conditions need to be present: (a) employees need to feel that the organisation structurally supports innovation (Veenendaal & Bondarouk, 2015), (b) individuals must feel the freedom to influence how work is conducted (Junglas et al., 2019), and (c) there needs to be an emotional attachment to between the individual and the goals of the organisation (Khaola & Coldwell, 2019). Nursing leaders play an essential role in facilitating these resources when (a) individuals perceive the organisation to structurally support or encourage innovative behaviours, (b) when these individuals may feel as though they have more autonomy at work, and (c) when they experience their work as meaningfully contributing to the operationalization of the organisation's overall strategy (Veenendaal & Bondarouk, 2015). Although the link between and techniques for fostering autonomy and affective commitment is prevalent in the literature, the complexity of structural supporting mechanisms required to encourage innovative behaviours of nurses is not (Yan et al., 2020).

Research has suggested that human resource management (HRM) practices could be one way to structurally encourage innovation (e.g. De Leede & Looise, 2005; Shipton et al., 2016). The basic premise is that employees perceive HRM practices as signals from the organisation that innovative behaviours are valued, appreciated and rewarded, encouraging employees to further explore how to enact these behaviours. Several of these so-called 'high-involvement HRM' practices have demonstrated to influence employees' innovative behaviours (Bos-Nehles et al., 2017). Scholars who have attempted to examine the HRM–innovation relationship argue that if these HRM practices are present and perceived to be valuable, it could lead to experiences of autonomy at work and commitment to the organisation (Bos-Nehles et al., 2017; Seeck & Diehl, 2017), both of which are operational requirements for the experience of innovative behaviours (Junglas et al., 2019; Khaola & Coldwell, 2019). Therefore, it is important to consider nurses' perceptions of 'high-involvement HRM' in line with this important tenet.

The purpose of this paper was to investigate how high-involvement HRM practices (hereafter called 'high-involvement practices') relate to nursing staff' innovative behaviours and to examine the underlying mechanisms that affect this relationship. Specifically, the aim was to determine how autonomy and affective commitment could mediate the effect of high-involvement practices on health care workers' innovative behaviours.

2 | BACKGROUND

Innovative work behaviours are seen as extra-role behaviours related to the *'intentional creation, introduction, and application of new ideas within a work role, group, or organization to benefit role performance, the group, or the organization'* (Janssen, 2000, p. 288). Research suggests these extra-role behaviours are functionally dependent upon contextual (e.g. involvement practices) and individual factors (e.g. autonomy and affective commitment).

Creating freedom and autonomy for employees facilitates innovative behaviours (Demircioglu, 2021; Sönmez & Yıldırım, 2019). Therefore, when organisations want to increase nursing staff's innovative behaviours, they need to increase job control (Yan et al., 2020). High-involvement management creates empowered employees by providing information and decision-making authority (Guthrie, 2001; Stander & Van Zyl, 2019), thereby positively influencing innovation outcomes (Seeck & Diehl, 2017). Consequently, our research focuses on four high-involvement HRM practices: teamwork, training and development, information sharing and performance feedback. When employees perceive that they can work closely together in teams, are offered sufficient training and development opportunities, feel that information is shared with them and get adequate feedback on their work, they will respond by offering innovative behaviours to the organisation. Nursing staff must *experience* the presence of involvement practices and perceive this as a signal of the organisation's investment in a long-term relationship (Kehoe & Wright, 2013).

In line with Shin et al. (2016), we argue that high-involvement practices are associated with higher levels of innovative behaviours. In this study, we adopt two perspectives to explain how perceived HRM influences innovation by providing job resources (Boon & Kalshoven, 2014) and increasing desired job attitudes (Jiang et al., 2013). For that reason, we have included both autonomy as a job resource-related mediator and affective commitment as an attitudinal-oriented mediator. We argue that their responses to those HRM practices can explain how nursing staff's perceptions

[1]In the context of this study, elderly care refers to a broad class of organizations that tend to the special needs of senior citizens. These needs may pertain to assisted living services and long-term health care.

of high-involvement practices could affect innovative behaviours. If these lead to enhanced feelings of autonomy and affective commitment, it may positively influence the nursing staff's innovative behaviours.

2.1 | High-involvement HRM, autonomy and innovative behaviour

Autonomy is understood as the authority and freedom to exercise decision-making about work methods and performing nursing tasks (Weston, 2008). Self-determination theory posits that job autonomy, next to a feeling of competence and relatedness with others, is likely to increase intrinsic motivation (Ryan & Deci, 2000). In contrast, substantial organisational control reduces nurse innovation (Li-Ying et al., 2016). Research indicates that nursing staff's perceived job control is related to higher innovation levels (Yan et al., 2020). Therefore, HRM practices that increase autonomy, competence and relatedness can enhance nursing staff's intrinsic motivation. Indeed, involvement practices have demonstrated to increase autonomy (Maurits et al., 2017; Shin et al., 2016) because workers are treated more as strategic partners rather than a means-to-an-end (Barney & Wright, 1998).

Further, involvement practices encourage nursing staff to perform their tasks in a way that is conducive to their own way of working (Bester et al., 2015; Liao et al., 2009). When nurses perceive that they have greater autonomy, they feel more freedom and motivation to participate in innovative activities (Ramamoorthy et al., 2005). Social exchange theory suggests that autonomy works as a motivational factor for innovative behaviour as people who feel that their organisation provides them with considerable freedom also feel a need to reciprocate in terms of generating and implementing valuable ideas (Blau, 1964; Ramamoorthy et al., 2005). Further, in line with self-determination theory, autonomy spurs innovative behaviours through enhanced intrinsic motivation (Gagné & Deci, 2005). Therefore, we expect nursing staff's perceptions of involvement practices to be positively related to nursing staff's autonomy, which positively relates to nursing staff's innovative behaviours.

2.2 | High-involvement HRM, affective commitment and innovative behaviour

Nursing staff who work in organisations with attractive organisational practices might well perceive their employer as supportive and, therefore, develop a stronger emotional attachment to and involvement of employees in the organisation (Meyer & Smith, 2000). High-involvement practices can increase employees' affective commitment by facilitating their participation in and connection to their employer and are thus seen as an attractive organisational practice. Based on the social exchange theory, we expect nurses who work in elderly care organisations that empower them to make their own decisions will demonstrate greater commitment towards their organisations (Blau, 1964; Kehoe & Wright, 2013). Employees committed to their organisation are willing to make additional efforts supporting that organisations strive to be more efficient, effective and innovative (Wright & Kehoe, 2008). This affective commitment level is a direct function of the culture and climate organisations create through their HRM practices (Veenendaal & Bondarouk, 2015). Affective commitment has been shown to mediate the climate for long-term care facilities' nursing and organisational performance (Woznyj et al., 2019). Affective commitment is essential for employees to demonstrate discretionary behaviours (like innovative behaviours) because committed employees are more likely to stay at their organisation and therefore more likely to reciprocate by investing in innovative behaviours (Jafri, 2010). Thus, we expect that HIHRM is positively associated with affective commitment, which leads to enhanced innovative behaviours.

Considering the theoretical relationships amongst these factors, it is clear that individual factors such as autonomy and commitment act as conduits that translates HRM practices into innovative behaviours. When nursing staff perceive high-involvement HRM practices, it may result in increased autonomy and commitment, resulting in more discretionary efforts to generate, champion and implement new ideas. Therefore, we expect that autonomy and affective commitment would mediate the relationship between HIHRM practices and nursing staff's innovative behaviour.

3 | METHODOLOGY

3.1 | Study design and setting

A cross-sectional online survey-based research design coupled with a purposive sampling strategy was employed to obtain data from four Dutch elderly care organisations. Data for this study were collected between May 2016 and January 2018.

3.2 | Participants

A purposive sampling strategy was employed. Specific inclusion and exclusion criteria were set. Participants were eligible for *inclusion* if they (a) were either fully or partially employed in a registered nursing home, (b) were considered as nursing staff within the given context and (c) worked in collective nursing teams. Participants were excluded if they were (a) non-nursing staff, (b) support service personnel (e.g. financial officers; security) or (c) medical doctors.

A power analysis with an anticipated effect size of 0.2 (large), a desired power of 0.85 and a probability level of 0.05 demonstrated that a sample size of 547 was required to solicit the desired effect (Wang & Rhemtulla, 2021). In total, 567 questionnaires were completed, indicating an overall response rate of 31%. As such, 567 registered nurses with a bachelor degree (14%), certified nursing assistants (54%), nursing aides (14%) and therapists and other staff

TABLE 1 Demographic and biographical characteristics

Variable	Category	Frequency (*f*)	Percentage (%)
Gender	Male	29	5.1
	Female	538	94.9
Contract type	Permanent	539	95.1
	Temporary	28	4.9
Job	Registered nurse (bachelor degree)	81	14.3
	Certified nursing assistants	303	53.4
	Nursing aides	82	14.5
	Paramedical staff	41	7.2
	Other	60	10.6
Age	18–20 years	3	0.5
	21–30 years	84	14.8
	31–40 years	97	17.1
	41–50 years	157	27.7
	51–60 years	194	34.2
	61 years and older	31	5.5
Marital status	Single	75	13.2
	Living with a partner	120	21.2
	Living with a partner and children	265	46.7
	Living with a partner and children have moved out	79	13.9
	Single with children	28	4.9
Years of employment	0–5 years	138	24.3
	6–10 years	152	26.8
	11–15 years	103	18.2
	16–20 years	79	13.9
	21 years and longer	94	16.6

(17%) working in nursing teams were drawn for this study (Table 1). The majority of the participants were permanently employed (95.1%), self-identified females (94.9%) between the ages of 51 and 60 years (34.2%) and living with a partner and children (46.7%). Most were employed between 6 and 10 years in their current profession (26.8%).

3.3 | Ethical considerations

Ethical clearance for the study was not required in terms of local legislation and institutional requirements. However, all Ethical Guidelines for Research Practices of the American Psychological Association were strictly adhered to in the study's conceptualization and execution. All procedures performed in this study were following the requirements and ethical standards of the institution as well as in line with the Declaration of Helsinki. Informed consent was obtained from all participants before being permitted to participate in the study. In the invitation letter, the study outline was described, the rights and responsibilities of all parties were discussed, and the ethical code underpinning the research was mentioned. Participation in the study was entirely voluntary; participants were informed of their rights and responsibilities and that they had the right to withdraw at any time. Data management procedures were in line with the requirements of the GDPR.

3.4 | Measures

3.4.1 | All included items used a 5-point Likert scale

High-Involvement Human Resource Management practices were measured by four different HRM practice subscales. First, autonomous teamwork was measured by four items adapted from Boon et al. (2011) (e.g. 'I work in a self-organizing team'; $\alpha = 0.74$). Second, training and development refers to the presence of training and development activities to increase 'employees' knowledge and skills, and was measured using three items from Gould-Williams and Mohamed (2010) that were adapted to fit the context of the study (e.g. 'I get sufficient opportunities to attend skills training to improve my current functioning'; $\alpha = 0.91$). Third, information sharing was measured with five items adapted from Paré and Tremblay

(2007) (e.g. 'I am regularly informed on the vision and mission of the company'; $\alpha = 0.88$). Finally, performance feedback was measured with four items adapted from Chuang and Liao (2010) and from Zhou (2003) to match the context of the current study (e.g. 'My supervisor never gives me developmental feedback' (reverse item); $\alpha = 0.82$).

Autonomy was assessed by three items from Boon et al. (2011), assessing autonomy in terms of 'employees' feelings regarding the control they have over their own work (e.g. 'I have the opportunity to make my own decisions on how to do my tasks'). The autonomy scale demonstrated sufficient reliability with Cronbach's alpha value of 0.81 (Boon et al., 2011).

Affective commitment was measured by eight items of the affective commitment subscale of Allen and 'Meyer's (1990) organisational commitment instrument – (e.g. 'I would be very happy to spend the rest of my career with this organization'). The scale demonstrated sufficiently reliable with Cronbach's alpha value of 0.79 in the original study (Allen & Meyer, 1990).

Innovative behaviour was assessed through De Jong and Den Hartog (2010) ten-item innovative work behaviour scale. The scale measured 'employees' perceptions of their own innovative behaviour at work. The instrument measured idea exploration (2 items), generation (3 items), championing (2 items) and realization (3 items). An example item under the generation component is 'I find new approaches to execute tasks in my work'. The instrument demonstrated sufficient reliability in the Dutch context with Cronbach Alpha's ranging from 0.94 (for the full scale) to 0.93 for idea generation, 0.88 for idea promotion and 0.84 for idea realization (Van Zyl et al., 2019).

Control variables were selected based on previous research demonstrating that organisational type, tenure and gender may potentially affect innovative behaviour (see Bos-Nehles & Veenendaal, 2017; De Jong & Den Hartog, 2010).

3.5 | Data analysis

Data were processed with SPSS version 26 (IBM SPSS, 2019) and Mplus version 8.4 (Muthén & Muthén, 2010). *First*, the presence of common method bias (CMB) was assessed both with Harman's single-factor test and with a series of common latent factor methods (Tehseen et al., 2017).

Second, descriptive statistics (means, standard deviations, skewness and kurtosis), internal consistency and Pearson or Spearman correlation coefficients (depending on data normality) were computed to determine the distribution of the data, the reliability of the instruments and the relationships between the variables. Further, based on Kim's (2013) suggestion, absolute values for skewness (< 2) and kurtosis (< 2) were used as indicators of multivariate normality.

Further, the internal consistency of the instruments was estimated using Cronbach's alpha (> 0.70) and composite reliability (> 0.70) (Van Zyl, 2013; Wang & Wang, 2012). The level of statistical significance for the relationships was set at 95% ($p \leq .05$), whereas the effect sizes were set at 0.30 (medium effect) and 0.50 (large effect) (Ferguson, 2009). *Third*, a competing measurement modelling strategy employing a confirmatory factor analytical (CFA) approach within the structural equation modelling framework was used to determine the best-fitting measurement model for our data. Given the distribution of the data, the robust maximum-likelihood estimation method (MLM) was used.

To determine data-model fit and to mitigate the criticisms of the Hu and Bentler (1999) method of selecting best-fitting models solely based on suggested 'cut-off' scores, a sequential evaluation process was employed. Both model fit and measurement quality need to be established to determine the best-fitting model for the data. To discriminate between models and to determine data-model fit, a combination of the traditional fit indices proposed by Hu and Bentler (1999) and Wang and Wang (2020) was used (c.f. Table 2). Thereafter, measurement quality was assessed through inspecting the standardized factor loadings ($\lambda > 0.50$; $p < .01$),[2] standardized residual error (<0.10), item uniqueness (> 0.10 but <0.9; $p < .01$), composite reliability ($\rho < 0.70$) and ensuring that no cross-loadings were present (Asparouhov & Muthén, 2009; Kline, 2011). Models that demonstrated excellent model-fit and measurement quality were retained for further analyses (McNeish et al., 2018; McNeish & Hancock, 2018; Shi, Lee, Maydeu-Olivares, 2019). Based on the best-fitting measurement model, a structural path model was constructed to determine the associations between the latent variables (Hair et al., 2010).

Finally, the indirect effects of autonomy and affective commitment on the relationship between high-involvement practices and innovative behaviour were tested using a path model with the bias-corrected bootstrapping method (Preacher et al., (2010). Here 20,000 iterations were bootstrapped to determine the indirect effect estimate change at the 95% confidence interval limit.

[2]Although it is beyond the scope of this paper to discuss the criticisms regarding the Hu and Bentler (1999) method of selecting 'best fitting models' solely based upon their cut-off values for RMSEA, SRMR, CLT/TFI, etc., it is important to note that these cut-off scores are mostly miscited, overgeneralized and inappropriately applied (c.f. Greiff & Heene, 2017; McNeish, An, & Hancock, 2018; McNeish & Hancock, 2018; Shi, Lee, & Maydeu-Olivares, 2019). Recent simulation studies have demonstrated that these suggested cut-off values of the fit indices are highly susceptible to the size of the covariance matrix, sample size, the model type, violations of multivariate normality and more importantly measurement quality. These studies demonstrate that the sensitivity of these cut-off values (e.g. CFI >0.9; TLI >0.90; RMSEA <0.08; and SRMR <0.08) to detect model misspecification is extremely low (Greiff &Heene, 2017). Models which demonstrate poor measurement quality (e.g. factor loadings <0.5; items loading on more than one factor, etc.) are more likely to produce 'excellent model fit statistics' based on cut-off criteria of Hu and Bentler (1999). In contrast, where models have demonstrated excellent measurement quality, they usually produce higher SRMR, RMSEA, chi-square and lower CFI/TIL values (in other words, poorer fit). This in effect implies that solely selecting a 'best fitting model' based on loosely defined and general model fit indices, without further consideration as to other matters such as factor loadings, significance of variances, error of measurement, item uniqueness, etc., greatly limits the broader validity of these models. In other words, just because a model meets or exceeds the model fit criteria specified by Hu and Bentrler (1999) does not mean that it is the best-fitting model for the data. We urge readers to consult McNeish et al., (2018) for a non-technical primer and a thorough explanation on the matter. 'There are no golden rules for cut-off values, there are only misleading ones' (Greiff & Heene, 2017, p. 315).

TABLE 2 Model fit statistics

Fit indices	Cut-off criterion	Sensitive to *N*	Penalty for model complexity
Absolute fit indices			
Chi-square (χ^2)	Lowest comparative value between measurement models Significant (p >.01)	Yes	Yes
χ^2/df	< 5	No	No
Approximate fit indices			
Root-means-square error of approximation (RMSEA)	< 0.08 but >0.01 90% CI range does not include zero	Yes	Yes
Standardized root-mean-square residual (SRMR)	< 0.08 but >0.01	Yes	No
Incremental fit indices			
Comparative Fit Index (CFI)	> 0.90 but <0.99	No	Yes
Tucker–Lewis Index (TLI)	> 0.90 but <0.99	No	Yes
Akaike information criterion (AIC)	Lowest value in comparative measurement models	No	No
Bayes information criterion (BIC)	Lowest value in comparative measurement models	No	No

Note: Adapted from Kline (2011); Marsh and Hocevar (1985) Wang and Wang (2020)

4 | RESULTS

4.1 | Common method bias

To determine the presence of CMB a series of sequential and more restrictive statistical, computational approaches were employed. First, all items were entered into an unrotated exploratory factor analysis employing the principal component analytical method. No single component could be extracted, and common shared variance was below the suggested 35% cut-off (Tehseen et al., 2017). Next, Tehseen et al. (2017) suggested using a single-factor CFA approach where all observed indicators loaded directly onto a single latent variable to further assess for CMB. Here, data fit was weak (X^2 = 6,501.03; *df* = 704; CFI = 0.36; TLI = 0.32; RMSEA = 0.12; SRMR=0.13), which indicated that a single factor could not be fitted to the data. Finally, the common latent factor approach of Podsakoff et al. (2003) was employed as a final measure to rule out CMB. The results showed that the variance explained by the common latent factor in each item was low (< 2%), no difference in item loadings between the models exceeded 0.2, and the inter-item correlations were similar for the models with and without the common factor (Podsakoff et al., 2003). Therefore, the presence of common method bias could be ruled out.

4.2 | Descriptive statistics, internal consistencies and correlations

The means, standard deviations and correlations for the study variables are presented in Table 3. Significant positive correlations were found for our hypothesized relationships. Further, with the exclusion of idea exploration, all instruments showed to be reliable at both the lower and upper bound limits with Cronbach alpha's ranging from 0.70 to 0.91 and composite reliabilities ranging from 0.75 to 0.92.

4.3 | Measurement models

To determine the best measurement model, five competing theoretically informed CFA models were estimated. Observed variables were used as indicators of first-order latent variables. No items were removed, correlated or parcelled. Control variables were included and left to correlate freely with other factors. The following models were estimated:

- **Model 1:** We first tested our hypothesized measurement model with four factors matching our four variables: High-involvement practices as a second-order four-factor construct with items loading on all four individual HRM practices; autonomy included three items; affective commitment all eight items; and innovative behaviour as a second-order four-factor variable with items loading onto idea exploration, generation, championing and realization.
- **Model 2:** A one-factor construct for high-involvement practices was fitted to the data in which all items were loaded directly onto HRM. Both autonomy and affective commitment were specified as one-factor models with items loading on their a priori factors. Innovative behaviour was modelled the same as in Model 1.
- **Model 3:** High-involvement practices were specified as four first-order latent factors with items loading onto their a priori factors: Training & Development, Performance Feedback, Information Sharing and Autonomous Teamwork. Both autonomy and affective commitment were specified as one factor models comprising three and eight items, respectively. Innovative behaviour was

TABLE 3 Descriptive statistics, alpha coefficients, composite reliabilities and correlations

Variable	M	*SD*	Skewness	Kurtosis	ρ	α	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Tenure	12.06	8.52	0.81	0.15	-	-													
2. Gender	0.05		4.09	14.75	-	-	0.06												
3. Employees' perceptions of high-involvement HRM	3.88	0.65	−0.93	1.16	0.75	0.70	0.09*	−0.07											
4. Autonomous teamwork	3.97	0.78	−0.99	1.26	0.76	0.74	0.08	−0.02	0.56[b]										
5. Training and development	4.21	0.90	−1.37	1.77	0.92	0.91	0.10*	−0.05	0.70[b]	0.27[b]									
6. Information sharing	3.59	0.92	−0.51	−0.27	0.89	0.88	0.08	−0.06	0.77[b]	0.24[b]	0.43[b]								
7. Performance feedback	3.75	0.95	−0.74	0.31	0.85	0.82	0.04	−0.07	0.74[b]	0.24[b]	0.40[b]	0.50[b]							
8. Autonomy	3.95	0.76	−1.07	1.30	0.83	0.82	0.04	0.03	0.48[b]	0.56[b]	0.29[b]	0.31[b]	0.30[b]						
9. Commitment	3.42	0.70	−0.33	0.47	0.80	0.80	0.12[a]	0.01	0.41[b]	0.24[b]	0.27[b]	0.32[b]	0.33[b]	0.22[b]					
10. IWB	3.75	0.65	−0.28	0.47	0.92	0.85	0.01	0.00	0.23[b]	0.15[b]	0.16[b]	0.21[b]	0.16[b]	0.32[b]	0.21[b]				
11. Idea exploration	3.95	0.73	−0.77	1.09	0.59	0.60	0.03	0.03	0.19[b]	0.13[b]	0.16[b]	0.19[b]	0.13[b]	0.25[b]	0.18[b]	0.70[b]			
12. Idea generation	4.00	0.67	−0.52	0.83	0.83	0.83	−0.02	0.00	0.18[a]	0.14[b]	0.11*	0.15[b]	0.11[b]	0.23[b]	0.15[b]	0.85[b]	0.53[b]		
13. Idea championing	3.47	0.88	−0.40	0.16	0.83	0.83	0.02	−0.02	0.21[b]	0.13[b]	0.14[b]	0.20[b]	14[b]	0.28[b]	0.21[b]	0.88[b]	0.42[b]	0.66[b]	
14. Idea realization	3.57	0.84	−0.55	0.73	0.86	0.86	0.00	0.00	0.21[b]	0.14[b]	0.15[b]	0.18[b]	0.16[b]	0.30[b]	0.17[b]	0.88[b]	0.41[b]	0.67[b]	0.79[b]

Note: $N = 567$ employees

*Correlation significant at $p < .05$

[b]correlation significant at $p < .01$ (two-tailed test).

TABLE 4 Fit statistics for competing measurement models

Model	χ^2	*df*	$\chi 2/df$	CFI	TLI	RMSEA		SRMR	AIC	BIC	Meets criteria
						Value	CI [95%]				
Model 1	1686.31	729	2.31	0.90	0.90	0.05	0.045–0.051	0.07	56,109.84	56,678.43	Yes
Model 2	3,398.73	733	4.64	0.71	0.69	0.08	0.077–0.083	0.08	58,138.55	58,689.77	No
Model 3	1761.14	722	2.44	0.89	0.87	0.05	0.047–0.053	0.06	56,216.48	56,815.45	No
Model 4	3,577.91	737	4.85	0.69	0.67	0.08	0.080–0.085	0.08	58,354.11	58,887.98	No
Model 5	1811.77	731	2.48	0.88	0.87	0.05	0.048–0.054	0.08	56,255.97	56,815.88	No

Abbreviations: CFI, Comparative Fit Index; *df*, degrees of freedom; RMSEA, root-mean-square error of approximation; SRMR, standardized root-mean-square residual.; TLI, Tucker–Lewis Index; χ^2, Chi-square.

TABLE 5 Measurement Quality—Standardized factor loadings, item uniqueness, item variance, average variance extracted and composite reliability

Model 1								Model 2							Model 3
Factor	Item	λ	S.E.	δ	R-square	AVE	ρ		λ	S.E.	δ	R-square	AVE	ρ	
First Order Factors															
Training and Development						0,78	0,92	High-involvement HRM					0,34	0,89	Training and Development
	TRAIN1	0,87	0,02	0,25	0,75				0,66	0,02	0,57	0,43			
	TRAIN2	0,88	0,02	0,22	0,78				0,66	0,03	0,56	0,44			
	TRAIN3	0,90	0,02	0,18	0,82				0,66	0,02	0,57	0,43			
Performance Feedback						0,60	0,85								Performance Feedback
	FEED1	0,84	0,02	0,30	0,70				0,66	0,02	0,57	0,44			
	FEED2	0,97	0,01	0,07	0,94				0,72	0,02	0,49	0,52			
	FEED3	0,41	0,04	0,83	0,17				0,34	0,04	0,88	0,12			
	FEED4	0,79	0,02	0,38	0,62				0,64	0,03	0,59	0,41			
Autonomous Team Work						0,45	0,76								Autonomous Team Work
	TEAMW1	0,68	0,03	0,55	0,46				0,28	0,04	0,92	0,08			
	TEAMW2	0,54	0,03	0,71	0,29				0,33	0,04	0,89	0,11			
	TEAMW3	0,82	0,02	0,33	0,67				0,34	0,04	0,88	0,12			
	TEAMW4	0,61	0,03	0,63	0,37				0,31	0,04	0,90	0,10			
Information Sharing						0,61	0,88		0,72	0,02	0,48	0,52			Information Sharing
	INFO1	0,77	0,02	0,41	0,59				0,70	0,02	0,52	0,48			
	INFO2	0,80	0,02	0,36	0,64				0,63	0,03	0,61	0,39			
	INFO3	0,75	0,02	0,44	0,56				0,66	0,03	0,57	0,43			
	INFO4	0,73	0,02	0,47	0,53				0,71	0,02	0,49	0,51			
	INFO5	0,84	0,02	0,30	0,71										
Autonomy						0,62	0,83	Autonomy					0,62	0,83	Autonomy
	AUTON1	0,87	0,02	0,25	0,75				0,87	0,02	0,24	0,76			
	AUTON2	0,72	0,03	0,49	0,51				0,71	0,03	0,49	0,51			
	AUTON3	0,78	0,03	0,39	0,61				0,78	0,03	0,39	0,61			

tested in a one-factor model in which all items were loaded directly onto the latent construct.

- **Model 4:** One-factorial models with all items directly loading onto each a priori single latent construct were specified.
- **Model 5**: High-involvement practices were specified as a formative variable where high-involvement practices were specified as having no residual variance but comprised a weighted sum of four factors with their respective indicators. Both autonomy and affective commitment were specified as one factor models comprising three and eight items, respectively. Innovative behaviour was modelled the same as in Model 1.

The model fit statistics, summarized in Table 4, indicate that Model 1 fitted the data significantly better ($\chi^2_{(729)}$ = 1686.30; χ^2/df = 2.31; p = .00; CFI = 0.90; TLI = 0.90; RMSEA = 0.05 [CI: 0.045–0.051]; SRMR = 0.07) than any of the other competing measurement models.

Further, measurement quality was assessed for each of the models and the results summarized in Table 5. The results showed that only Model 1 had standardized factor loadings exceeding the threshold for each item ($\lambda > 0.50$; $p < .01$), with standardized residual errors lower than the <0.10, item uniqueness within acceptable ranges ($\lambda > 0.10$ but <0.9; $p < .01$) and with the exclusion of idea

						Model 4							Model 5						
λ	S.E.	δ	R-square	AVE	ρ		λ	S.E.	δ	R-square	AVE	ρ		λ	S.E.	δ	R-square	AVE	ρ
				0,78	0,92	High-involvement HRM	BY				0,34	0,89	Training and Development					0,82	0,93
0,87	0,02	0,25	0,76				0,66	0,02	0,57	0,43				0,90	0,01	0,19	0,81		
0,88	0,02	0,22	0,78				0,66	0,03	0,56	0,44				0,90	0,02	0,19	0,81		
0,90	0,02	0,18	0,82				0,66	0,02	0,57	0,43				0,92	0,01	0,16	0,84		
				0,60	0,85								Performance Feedback					0,60	0,85
0,84	0,02	0,30	0,70				0,66	0,02	0,57	0,44				0,83	0,02	0,31	0,69		
0,97	0,01	0,06	0,94				0,72	0,02	0,48	0,52				0,97	0,01	0,06	0,94		
0,41	0,04	0,83	0,17				0,34	0,04	0,88	0,12				0,41	0,04	0,83	0,17		
0,79	0,02	0,38	0,62				0,64	0,03	0,59	0,41				0,78	0,02	0,39	0,61		
				0,45	0,76								Autonomous Team Work					0,45	0,76
0,69	0,03	0,53	0,47				0,28	0,04	0,92	0,08				0,68	0,03	0,54	0,46		
0,54	0,04	0,71	0,29				0,33	0,04	0,89	0,11				0,55	0,03	0,70	0,30		
0,83	0,02	0,32	0,68				0,34	0,04	0,88	0,12				0,82	0,02	0,34	0,66		
0,59	0,03	0,65	0,35				0,31	0,04	0,90	0,10				0,60	0,03	0,64	0,36		
				0,61	0,88								Information Sharing					0,61	0,88
0,77	0,02	0,41	0,59				0,72	0,02	0,48	0,52				0,76	0,02	0,42	0,58		
0,80	0,02	0,36	0,64				0,70	0,02	0,52	0,48				0,80	0,02	0,36	0,64		
0,75	0,02	0,44	0,56				0,63	0,03	0,61	0,39				0,76	0,02	0,43	0,57		
0,73	0,02	0,47	0,53				0,66	0,03	0,57	0,43				0,73	0,02	0,47	0,53		
0,84	0,02	0,30	0,71				0,71	0,02	0,49	0,51				0,84	0,02	0,29	0,71		
				0,62	0,83	Autonomy					0,62	0,83	Autonomy					0,53	0,77
0,84	0,02	0,29	0,71				0,87	0,02	0,24	0,76				0,68	0,02	0,53	0,47		
0,74	0,03	0,45	0,55				0,71	0,03	0,50	0,51				0,77	0,02	0,40	0,60		
0,78	0,02	0,40	0,60				0,78	0,03	0,39	0,61				0,71	0,02	0,49	0,51		

(Continues)

TABLE 5 (Continued)

Model 1								Model 2						Model 3
Factor	**Item**	**λ**	**S.E.**	**δ**	**R-square**	**AVE**	**ρ**		**λ**	**S.E.**	**δ**	**R-square**	**AVE**	**ρ**	
Affective Org. Com.						0,35	0,80	Affective Org. Com.					0,35	0,80	Affective Org. Com.
	COM1	0,69	0,03	0,53	0,47				0,69	0,03	0,53	0,47			
	COM2	0,71	0,03	0,50	0,50				0,71	0,03	0,50	0,50			
	COM3	0,51	0,04	0,74	0,26				0,51	0,04	0,74	0,26			
	COM4	0,50	0,04	0,87	0,25				0,36	0,04	0,87	0,13			
	COM5	0,50	0,04	0,75	0,25				0,50	0,04	0,75	0,25			
	COM6	0,57	0,03	0,68	0,32				0,57	0,03	0,68	0,32			
	COM7	0,71	0,03	0,49	0,51				0,71	0,03	0,49	0,51			
	COM8	0,59	0,04	0,66	0,34				0,59	0,04	0,66	0,34			
Idea Exploration	OPP					0,43	0,59	Idea Exploration					0,43	0,59	Idea Exploration
	IWB1	0,54	0,05	0,71	0,29				0,54	0,05	0,71	0,29			
	IWB2	0,75	0,04	0,44	0,56				0,75	0,04	0,44	0,56			
Idea Generation	GEN					0,63	0,83	Idea Generation					0,63	0,83	Idea Generation
	IWB3	0,73	0,03	0,47	0,53				0,73	0,03	0,47	0,53			
	IWB4	0,82	0,02	0,34	0,66				0,82	0,02	0,34	0,66			
	IWB5	0,83	0,02	0,32	0,68				0,83	0,02	0,32	0,68			
Idea Championing	CHAM					0,71	0,83	Idea Championing					0,71	0,83	Idea Championing
	IWB6	0,82	0,02	0,33	0,67				0,82	0,02	0,33	0,67			
	IWB7	0,87	0,02	0,24	0,76				0,87	0,02	0,24	0,76			
Idea realization	IMP					0,68	0,86	Idea realization					0,68	0,86	Idea realization
	IWB8	0,84	0,02	0,30	0,70				0,84	0,02	0,30	0,70			
	IWB9	0,83	0,02	0,32	0,68				0,83	0,02	0,32	0,68			
	IWB10	0,80	0,02	0,35	0,65				0,80	0,02	0,35	0,65			

Model 1								Model 2						
Factor	**Item**	**λ**	**S.E.**	**δ**	**R-square**	**AVE**	**ρ**		**λ**	**S.E.**	**δ**	**R-square**	**AVE**	**ρ**
Second-order Factors														
Innov. Behaviour						0,75	0,92	Innov. Behaviour					0,75	0,92
	Idea Generation	0,83	0,02	0,54	0,69				0,83	0,02	0,001	0,69		
	Idea Exploration	0,68	0,05	0,31	0,46				0,68	0,05	0,001	0,46		
	Idea Championing	0,97	0,02	0,06	0,94				0,97	0,02	0,001	0,94		
	Idea Realization	0,95	0,02	0,10	0,90				0,95	0,02	0,001	0,90		
High-involvement HRM						0,43	0,75							
	Training and Development	0,67	0,03	0,55	0,45									

Model 4						Model 5											
λ	S.E.	δ	R-square	AVE	ρ		λ	S.E.	δ	R-square	AVE	ρ		λ	S.E.	δ	R-square	AVE	ρ
				0,35	0,80	Affective Org. Com.					0,35	0,80	Affective Org. Com.					0,35	0,80
0,69	0,03	0,53	0,47				0,69	0,03	0,53	0,47				0,69	0,03	0,53	0,47		
0,71	0,03	0,50	0,50				0,71	0,03	0,50	0,50				0,70	0,03	0,51	0,49		
0,51	0,04	0,74	0,26				0,51	0,04	0,74	0,26				0,51	0,04	0,74	0,26		
0,36	0,04	0,87	0,13				0,36	0,04	0,87	0,13				0,36	0,04	0,87	0,13		
0,50	0,04	0,75	0,25				0,50	0,04	0,75	0,25				0,50	0,04	0,75	0,25		
0,57	0,03	0,68	0,32				0,57	0,03	0,68	0,32				0,56	0,03	0,68	0,32		
0,72	0,03	0,49	0,51				0,71	0,03	0,49	0,51				0,72	0,03	0,49	0,52		
0,58	0,04	0,66	0,34				0,59	0,04	0,66	0,34				0,58	0,04	0,66	0,34		
				0,51	0,91	Innovative work behaviours					0,51	0,91	Idea Exploration					0,43	0,59
0,38	0,04	0,86	0,15				0,38	0,04	0,86	0,15				0,54	0,05	0,71	0,29		
0,53	0,03	0,73	0,28				0,53	0,03	0,73	0,28				0,75	0,04	0,44	0,56		
													Idea Generation					0,63	0,83
0,69	0,03	0,53	0,47				0,69	0,03	0,53	0,47				0,73	0,03	0,47	0,53		
0,70	0,02	0,52	0,48				0,70	0,02	0,52	0,48				0,82	0,02	0,34	0,66		
0,72	0,02	0,49	0,51				0,72	0,02	0,49	0,51				0,83	0,02	0,32	0,69		
													Idea Championing					0,71	0,83
0,78	0,02	0,39	0,61				0,78	0,02	0,39	0,61				0,82	0,02	0,33	0,67		
0,83	0,02	0,30	0,70				0,83	0,02	0,30	0,70				0,87	0,02	0,25	0,76		
													Idea realization					0,68	0,86
0,82	0,02	0,33	0,67				0,82	0,02	0,33	0,67				0,84	0,02	0,30	0,70		
0,79	0,02	0,38	0,62				0,79	0,02	0,38	0,62				0,83	0,02	0,32	0,68		
0,77	0,02	0,40	0,60				0,77	0,02	0,41	0,59				0,81	0,02	0,35	0,65		

Model 3						Model 4						Model 5						
λ	S.E.	δ	R-square	AVE	ρ	λ	S.E.	δ	R-square	AVE	ρ		λ	S.E.	δ	R-square	AVE	ρ
												Innov. Behaviour					0,75	0,92
													0,83	0,02	0,54	0,69		
													0,68	0,04	0,31	0,46		
													0,97	0,02	0,06	0,94		
													0,95	0,02	0,10	0,90		
												High Involvement HRM					0,38	0,71
													0,66	0,02	0,57	0,43		

(Continues)

TABLE 5 (Continued)

Model 1								Model 2					
Factor	Item	λ	S.E.	δ	R-square	AVE	ρ	λ	S.E.	δ	R-square	AVE	ρ
	Performance Feedback	0,68	0,03	0,54	0,46								
	Autonomous Team Work	0,54	0,04	0,71	0,29								
	Information Sharing	0,74	0,03	0,46	0,54								

TABLE 6 Fit statistics for structural models

						RMSEA					
Model	χ^2	*df*	$\chi 2/df$	CFI	TLI	Value	CI [95%]	SRMR	AIC	BIC	Meets criteria
Model 1	1625.85	722	2.25	0.91	0.90	0.05	0.044–0.050	0.06	56,042.61	56,641.58	Yes

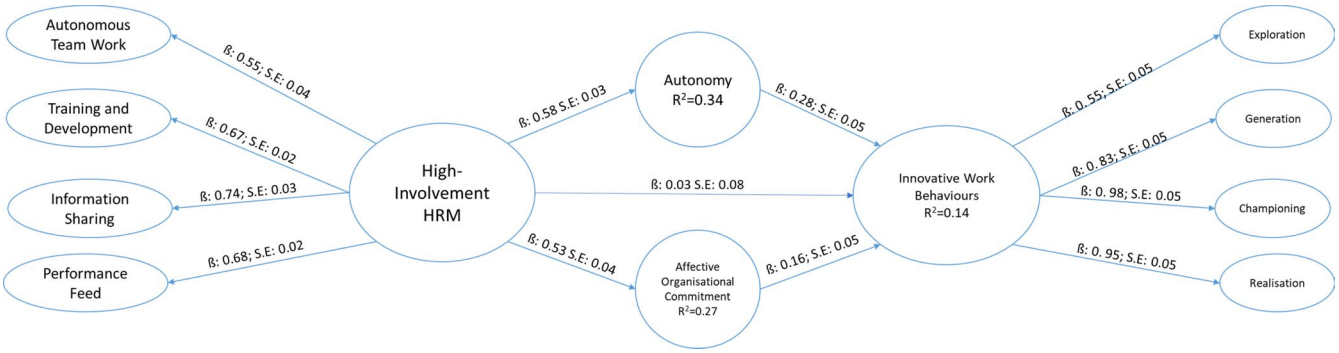

FIGURE 1 SEM results: mediation effect of autonomy and affective commitment in the relationship between high-involvement HRM and IWB

generation, the composite reliabilities of each factor higher than ($\rho < 0.70$). No cross-loadings were present for Model 1 (Asparouhov & Muthén, 2009; Kline, 2011). As such, Model 1 was retained for further analyses.

4.4 | Structural model and hypotheses

The best-fitting measurement model was then transformed in to structural path model (Model 1). As can be seen in Table 6, our hypothesized model had acceptable fit: $\chi^2_{(722)} = 1625.85$; $p = .00$; CFI = 0.91; TLI = 0.90; RMSEA = 0.05; SRMR = 0.06.

The results demonstrated that employees' perceptions of involvement practices are positively and significantly related to autonomy ($\beta = 0.58$, $p < .01$). Furthermore, again as shown in Figure 1, the relationship between autonomy and innovative behaviour is indeed positive and significant ($\beta = 0.28$, $p < .001$) and employees' perceptions of involvement practices are indeed also positively and significantly related with affective commitment ($\beta = 0.53$, $p < .01$). The positive relationship between affective commitment and innovative behaviour was shown to exist and be significant ($\beta = 0.16$, $p < .01$). Finally, affective commitment and autonomy together predicted 14% of the variance in innovative behaviour.

4.5 | Indirect effects

Finally, the results showed that the individual indirect effects for autonomy ($\beta = 0.20$, $p < .001$; CI: 0.10–0.35) and affective commitment ($\beta = 0.09$, $p < .01$; CI: 0.03–0.17) were both significant and the confidence interval did not include zero. Therefore, autonomy and affective commitment indirectly affected the relationship between involvement practices and innovative behaviour.

5 | DISCUSSION

This study aimed to investigate the relationship between high-involvement HRM practices, autonomy, commitment and innovative behaviours of nursing staff. The results demonstrated that positive relationships exist between involvement practices, autonomy, affective commitment and innovative behaviours. Further, both

Model 3						Model 4						Model 5					
λ	S.E.	δ	R-square	AVE	ρ	λ	S.E.	δ	R-square	AVE	ρ	λ	S.E.	δ	R-square	AVE	ρ
												0,51	0,03	0,74	0,26		
												0,70	0,03	0,51	0,49		
												0,57	0,03	0,68	0,32		

autonomy and affective commitment mediated the relationship between HRM and innovative behaviour. In so doing, we responded to calls to shed light on multiple factors that affect nursing staff's innovative behaviours and to uncover the theoretical foundations underlying the HRM–innovation relationship.

The findings showed that the positive relationship between high-involvement practices and innovative behaviours established in other contexts (Shin et al., 2016) also applies to nursing staff in elderly care. Our research indicates a positive relationship between nursing staff's autonomy and innovative behaviour, echoing previous studies (e.g. Knol & Van Linge, 2009; Wang et al., 2019; Yan et al., 2020). Furthermore, our results build on the literature that found that self-directed teamwork in nursing leads to more perceived autonomy (Maurits et al., 2017), enhancing innovation outcomes. Building on these findings, our model reveals the potential relation between high-involvement practices and innovative behaviours, which are explained through increased autonomy and affective commitment. Nursing staff who experience high-involvement practices also experience more autonomy and commitment, which explains their higher level of innovative behaviours. Hence, better involvement and communication with nurses can stimulate innovative behaviours of nursing teams in elderly care.

This research has several theoretical implications. One of the most important implications of our findings is that a combination of attitudes and resources acts as mediators between high-involvement practices and innovative behaviour. Our results indicated that autonomy and affective commitment indirectly and positively affect the relationship between nursing staff's perceptions of involvement practices and innovative behaviour. This implies that nurses' perceptions of these practices will only affect innovative behaviours if they perceive greater freedom in their work and more commitment to the organisation. As such, our research demonstrates that the extra-role behaviours of nurses in elderly care are both a function of internal experiences and external resources.

Second, our results show that employees' perception of a bundle of high-involvement human resource practices positively affects their innovative behaviour. We contribute to the literature by showing that employee involvement leads to behavioural outcomes such as innovative behaviour through autonomy and commitment (Kehoe & Wright, 2013). Our findings are in line with arguments derived from social exchange theory (Blau, 1964) in that employees seem to reciprocate investments in involvement practices with enhanced commitment towards the organisation, which in turn leads to increased innovative behaviours. Simultaneously, by drawing on self-determination theory (Gagné & Deci, 2005), we show that autonomy as a motivating factor is also a significant factor in explaining the link between high-involvement practices and innovative behaviour.

Finally, this research has empirically tested the effect of perceived high-involvement practices on innovative behaviour in a sample of nursing teams in the elderly care, individuals who are not explicitly required to be innovative (Kesting & Ulhøi, 2010). Within these contexts, the motivation for showing creative behaviours may be a strong predictor for innovative behaviour (Montag et al., 2012). In essence, the results show that all organisational members can be creative and geared towards problem-solving provided there is a supportive climate (Bos-Nehles & Veenendaal, 2017), thereby responding to calls to recognize the importance of frontline workers as a course of innovation in health care (McSherry & Douglas, 2011).

5.1 | Implications for nursing management

The results of this research have several implications for nursing leaders. To increase innovation, nursing leaders should involve nursing staff by adopting various high-involvement practices, such as investing in training and development, autonomous teamwork (Maurits et al., 2017), information sharing and performance feedback. Nursing leaders should also actively communicate the availability of these practices to nursing staff in order to reap its potential innovation benefits (Amo, 2006). Finally, our results highlight that when nursing leaders invest in boosting the commitment and autonomy of nursing teams, it can create a positive innovation climate that leads to higher levels of innovation (Yan et al., 2020), by providing nursing staff with opportunities to enhance their experience of competence, relatedness and autonomy through high-involvement practices.

5.2 | Limitations and future research directions

Our findings should be viewed in the light of the limitations of our research design. The first limitation is the use of self-reported data, which risks exaggeration or social desirability bias. Although this approach is quite common and prior research has found strong links

between self-reported and supervisor-reported innovative behaviours (Axtell et al., 2000), future research could enhance confidence by better triangulating this concept's measurement. Another limitation is the use of cross-sectional data. As a consequence, we cannot confidently conclude the causal directions of the proposed relationships. Also, common method bias and reversed causality cannot be ruled out. However, we included tests to account for common method bias, which suggest that these issues are not a concern here. Third, this research has been conducted in the long-term elderly care sector. Organisations in this sector are not usually involved in developing and introducing radically new products. For nursing staff in emergency care and hospitals, the level of innovation might be different (Bunpin et al., 2016). Future studies should incorporate the sectoral characteristics to be able to extend our findings to other health care organisations, let alone private-sector organisations with more intense competitive pressure (Bysted & Jespersen, 2014). Finally, this study provides some starting points into the type of autonomy that contributes to nursing staff' innovative behaviour. We studied both autonomous team working (as HR practices) and job autonomy (i.e. controlling *how* the work is conducted). Participatory working time scheduling software may enhance the control over *when* the work is conducted (Turunen et al., 2020). Therefore, future research should take the different aspects of autonomy into account: work method autonomy (conform our measurement of autonomy), work scheduling autonomy (order of the tasks), work time autonomy (when to work) and locational autonomy (which is almost absent in the elderly care sector).

6 | CONCLUSIONS

This research examined the relationship between high-involvement HRM practices, autonomy, affective commitment and innovative nursing staff's innovative behaviour within elderly care. The results provide insights into the underlying mechanisms that explain how HRM is linked to innovative behaviour. The findings show that if nursing staff perceive involvement practices, they are more likely to feel they have autonomy in their work and be committed to the organisation, which boosts their innovative behaviour. In this way, this study has advanced understanding of the HRM–innovation relationship and added knowledge on the employee-level mechanisms that link high-involvement practices with employee outcomes in the nursing context.

ACKNOWLEDGEMENTS

Will follow.

CONFLICT OF INTEREST

No conflict of interest was reported by the authors.

ETHICAL APPROVAL

Ethical clearance for the study was not required in terms of local legislation and institutional requirements. However, all Ethical Guidelines for Research Practices of the American Psychological Association were strictly adhered to in the study's conceptualization and execution. All procedures performed in this study were following the requirements and ethical standards of the institution as well as in line with the Declaration of Helsinki. Informed consent was obtained from all participants before being permitted to participate in the study. In the invitation letter, the study outline was described, the rights and responsibilities of all parties were discussed, and the ethical code underpinning the research was mentioned. Participation in the study was entirely voluntary; participants were informed of their rights and responsibilities and that they had the right to withdraw at any time. Data management procedures were in line with the requirements of the GDPR.

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