

# Management control and autonomous motivation in the public sector: Evidence from the Dutch National Police

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## Abstract

In public sector settings characterized by ambiguous goals and limited measurability of outputs, effective management control remains challenging. This study examines how results, action, personnel, and cultural controls are associated with autonomous motivation among employees of the Dutch National Police. Using survey data from 400 police employees, we test associations between control types and autonomous motivation and assess the moderating role of contractibility. We find that personnel controls are positively associated with autonomous motivation across contexts. Results controls are positively associated with autonomous motivation only under high contractibility, while action controls show no significant association. Cultural controls display a weaker and context-dependent association. The findings highlight the importance of aligning control choices with task characteristics in public sector organizations.

## Relevance to practice

This study underscores the need for policymakers and public sector managers to align management control systems with the nature of the work. Personnel controls are particularly effective in fostering autonomous motivation across diverse public roles. In contrast, the effectiveness of results controls depends on contractibility: they can enhance autonomous motivation in well-defined, measurable tasks but risk undermining it in complex or discretionary work. A more context-sensitive approach to management control design can help public organizations support autonomous motivation – an important condition associated with higher engagement, performance, and commitment in the workplace.

## Keywords

Systems of control, public sector, contractibility, motivation, police

## 1. Introduction

In environments where outputs are hard to define and performance is difficult to measure, the design of control systems becomes a critical governance challenge. For example, Molenaar and Hubers (2023) show that diffuse ownership and ambiguous goals make it difficult for supervisory boards to effectively balance monitoring and advisory roles in nonprofit organizations. Consistent with this, Speklé et al. (2022a) show that personnel and cultural controls play a particularly important role in supporting

employee motivation in public sector contexts. These insights resonate with broader challenges in the public sector, where formal control mechanisms may conflict with the need to foster intrinsic motivation and professional autonomy. A growing body of research suggests that management control systems can influence employees' motivation – an important predictor of job performance, satisfaction, well-being, and retention (Chen et al. 2020; Van der Hauwaert et al. 2022; Van der Kolk et al. 2019;

Van Triest et al. 2023). Understanding this relationship is essential for public organizations seeking to improve autonomous motivation and reduce turnover. However, empirical studies have produced mixed results, in part due to variation in control typologies, conceptual clarity, and contextual factors. This lack of theoretical and empirical consensus is one of the main reasons for undertaking the current study.

Within this broader context, the Dutch National Police provides a relevant empirical setting for this study. As a large public organization responsible for critical safety functions, the Dutch National Police operate in a complex and demanding environment characterized by both high workload and strong public accountability. At the same time, its work contexts vary widely in terms of task clarity and measurability: from structured and output-oriented roles (e.g., traffic enforcement or operations) to more ambiguous, diffuse tasks (e.g., community policing or investigative work). This diversity makes the Dutch National Police an ideal setting to examine how management controls can be used to support employee autonomous motivation in different institutional contexts.

Previous research suggests that the relationship between management control and employee motivation is complex and context dependent, particularly in public sector settings. Van der Kolk et al. (2019), for example, report positive associations between certain control practices and intrinsic motivation in municipal contexts characterized by relatively clear and measurable goals (see also Speklé and Verbeeten (2014)). Building on this work, Speklé et al. (2022b) introduce contractibility – the degree to which tasks and outputs can be specified and monitored – as a key contextual condition shaping the effectiveness of management control, showing that control systems aimed at directing effort operate differently under high versus low contractibility.

While prior work, including Speklé and Verbeeten (2014), demonstrates that contractibility conditions the effectiveness of performance measurement and results-based control, much less is known about how different types of management control relate to autonomous motivation at the employee level. In particular, existing studies provide limited evidence on how the associations between individual control mechanisms and autonomous motivation vary across work contexts with different levels of contractibility. As a result, it remains unclear whether conclusions about the relative effectiveness of different control approaches in public sector settings reflect general properties of these controls or mask more nuanced, control-specific patterns that depend on the nature of the work. This insight underlines the need for more fine-grained research into how different forms of management control influence autonomous motivation in settings that vary in contractibility.

The present study addresses this gap by examining how different types of management control are associated with autonomous motivation among employees of the Dutch National Police. We build on Speklé et al. (2022a),

who show that personnel- and culture-based control practices are associated with employee motivation indirectly via engagement, particularly under conditions of low contractibility. We extend their work in several complementary ways. First, we place autonomous motivation at the center of the analysis rather than treating motivation as a secondary outcome. Second, drawing on Merchant and Van der Stede's (2023) typology, we examine the full set of management controls (results, action, personnel, and cultural controls). Third, we focus on employees within a single, highly professionalized public organization, allowing us to hold institutional features largely constant while exploiting within-organization variation in task characteristics and contractibility. Moreover, studying police officers, who operate under high discretion, strong normative pressures, and limited output measurability, provides a stringent test of the motivational implications of management control in the public sector.

To investigate these relationships, we conducted a quantitative survey among 400 employees of the Dutch National Police. The sample includes a wide range of departments and job functions within the Dutch National Police, covering both high- and low-contractibility settings. This context enables us to analyze not only the direct effects of different types of control on autonomous motivation, but also the extent to which these effects depend on the nature of the work environment.

## 2. Literature review

### 2.1. Autonomous motivation

This study conceptualizes autonomous motivation using self-determination theory (SDT), a widely applied framework in organizational psychology (Ryan and Deci 2000a; Gagné and Deci 2005). SDT distinguishes different forms of motivation on a continuum ranging from amotivation – a lack of intent or motivation to act – to fully self-determined, autonomous motivation (Deci et al. 2017). Autonomous motivation refers to engaging in work that is experienced as personally meaningful and volitional, and is generally associated with favorable outcomes such as improved performance, well-being, and retention.

Autonomous motivation comprises two forms: identified regulation and intrinsic motivation. In the case of identified regulation, employees endorse externally set goals and integrate them into their personal value system. Intrinsic motivation, by contrast, refers to engaging in work for its inherent enjoyment or interest. Both forms reflect a sense of volition and psychological freedom, which are central to SDT's definition of autonomous functioning.

In contrast, controlled motivation arises when behavior is driven by external or internal pressures, such as rewards, punishments, or feelings of guilt and obligation. It includes external regulation – acting to obtain rewards or avoid sanctions – and introjected regulation – acting to avoid guilt or anxiety. Controlled motivation differs

qualitatively from autonomous motivation, but the two are not opposites; individuals may experience both simultaneously to varying degrees (Ryan and Deci 2000b). Amotivation describes the absence of motivation, where individuals lack intention or perceive their actions as pointless.

According to SDT, these different forms of motivation are explained by the satisfaction or frustration of three basic psychological needs. Autonomy refers to experiencing a sense of volition and psychological freedom in one's actions, competence to feeling effective and capable of mastering tasks, and relatedness to feeling connected and valued in one's social environment (Ryan and Deci 2000a; Deci and Ryan 2009). When organizational practices support these needs, employees are more likely to experience autonomous forms of motivation. When these needs are thwarted, motivation shifts toward controlled regulation or even amotivation.

Although early SDT research emphasized the undermining effect of extrinsic rewards on intrinsic motivation, more recent work recognizes important boundary conditions. Empirical studies suggest that extrinsic motivators can support rather than hinder motivation when they are perceived as autonomy-supportive (Deci et al. 2017; Aguinis and Burgi-Tian 2021). For example, non-contingent incentives and recognition may enhance motivation and well-being, whereas controlling reward structures tend to reduce intrinsic engagement. This distinction underscores the importance of understanding how organizational practices – such as the use of management control systems – can shape the quality of motivation.

## 2.2. Management control in the public sector

With regard to management control types, this study adopts the framework of Merchant and Van der Stede (2023), which identifies four types of management control: *results controls*, *action controls*, *personnel controls* and *cultural controls*. In this framework, results controls guide behavior by linking rewards or sanctions to measured outcomes, while action controls attempt to ensure that desirable actions are taken through rules, procedures, or supervision. Personnel controls focus on selecting, training, and empowering individuals who are likely to behave appropriately on their own. Cultural controls, finally, seek to align employees' norms and values with organizational goals, often through shared beliefs, socialization, and peer influence. Together, these mechanisms represent a comprehensive toolkit for managing behavior in diverse organizational contexts.

Applying management controls in the public sector poses specific challenges. Public organizations often operate under ambiguous, abstract, and sometimes conflicting goals. Performance is difficult to measure and the outcomes of public services are often qualitative or long-term in nature. In addition, these organizations face institutional and legal constraints in implementing performance-based reward systems (Merchant and Van der

Stede 2023). This makes it particularly difficult to use formal incentive structures to reinforce desired behavior. As a result, the applicability and effectiveness of results and action controls – such as output targets or prescribed behaviors – may be limited in public contexts.

These structural constraints also interact with psychological mechanisms. According to SDT (Ryan and Deci 2000a, 2000b; Deci et al. 2017), external controls that are perceived as controlling – such as tight performance monitoring or rigid procedures – can undermine employees' sense of autonomy and thereby reduce their autonomous motivation. Both results and action controls rely on such mechanisms and may therefore have this demotivating effect. Nonetheless, while these controls may reduce autonomous motivation, they can still elicit controlled motivation if employees comply for instrumental reasons, such as obtaining rewards or avoiding sanctions.

Since the further development of SDT in the 1970s, it has been argued that extrinsic motivators like performance-based rewards and deadlines tend to crowd out intrinsic motivation by fostering controlled regulation (Gagné and Deci 2005). However, this view has not gone unchallenged. Gerhart and Fang (2015), for instance, question the empirical generalizability of the undermining effect of performance pay in work settings. They argue that, under the right conditions, extrinsic rewards can also enhance motivation. Deci et al. (2017) acknowledge that the effect of rewards depends on their nature: contingent rewards tied to performance often reduce intrinsic motivation over time, while non-contingent rewards – such as a guaranteed base income – can have autonomy-supportive effects and foster well-being (Aguinis and Burgi-Tian 2021). In public sector contexts, where control is often externally imposed and output measurability is low, the risk that controls are experienced as autonomy-reducing – and thus undermine autonomous motivation – is particularly salient.

Empirical studies offer initial support for these expectations. Van der Kolk et al. (2019) found that the use of personnel and cultural controls is positively associated with employees' intrinsic motivation, and that the use of results controls is positively associated with employees' extrinsic motivation. The setting of this study – in Dutch municipalities – is characterized by a relatively low level of goal ambiguity and could be different when levels of goal ambiguity are higher. Chen et al. (2020) report that formal performance pressure undermines autonomous motivation, whereas supportive management practices increase it. Speklé et al. (2022a), studying public sector managers, found that cultural and personnel controls enhance motivation via greater organizational engagement.

Overall, prior research in public sector settings indicates that different types of management control are likely to have distinct motivational implications, although direct empirical evidence, especially at the employee level, remains limited. Existing studies have primarily examined control effectiveness in terms of effort direction or performance, leaving the implications for autonomous

motivation comparatively underexplored. From a theoretical perspective, results and action controls emphasize external evaluation, monitoring, and behavioral prescriptions, which are more closely aligned with externally regulated forms of motivation. In contrast, personnel and cultural controls operate through skill development, value alignment, and internalization processes that are generally considered more supportive of autonomous motivation.

In line with these theoretical considerations, and given the typical characteristics of public sector work environments, we propose the following hypotheses:

*H1:* In a public sector environment, results controls are negatively associated with autonomous motivation.

*H2:* In a public sector environment, action controls are negatively associated with autonomous motivation.

*H3:* In a public sector environment, personnel controls are positively associated with autonomous motivation.

*H4:* In a public sector environment, cultural controls are positively associated with autonomous motivation.

### 2.3. Contractibility

While previous research suggests that management controls can enhance employee motivation in the public sector (Van der Kolk et al. 2019), these findings may not apply equally across all work settings. Van der Kolk et al. (2019) conducted their study in a low-ambiguity environment characterized by routine tasks and clearly defined goals, and note that results may differ in more policy-oriented contexts, where tasks are complex and organizational goals are often ambiguous or contested.

Such differences across work settings can be conceptualized using the notion of contractibility, developed by Speklé and Verbeeten (2014). Contractibility refers to the extent to which goals are clearly defined, performance is measurable, and employees understand the causal links between their actions and organizational outcomes. In high-contractibility settings, organizations can more easily predict which activities and outputs lead to success. In contrast, low-contractibility environments – frequent in the public sector – are marked by vague objectives, limited measurability, and interdependent tasks, making control more difficult (Speklé et al. 2022a, 2022b).

When tasks are characterized by low contractibility, outcomes are difficult to measure and objectives are often vaguely defined. Under such conditions, the use of results controls may redirect attention toward indicators that are measurable rather than toward what employees themselves perceive as meaningful. This misalignment can create dysfunctional responses, such as gaming or goal displacement (Speklé and Verbeeten 2014; Verbeeten and Speklé 2015), but it can also undermine employees' autonomous motivation. According to SDT, autonomous motivation depends on the perception that one's work is self-endorsed and aligned with personal values and standards (Ryan and Deci 2000a). If performance is assessed through irrelevant or superficial measures, employees may

feel that the true value of their contributions is disregarded, thereby weakening their sense of autonomy. A similar logic applies to action controls. When complex or novel tasks are reduced to prescriptive procedures or quantified into fixed units of time and effort, employees experience diminished discretion and professional judgment. This restriction can erode their sense of autonomy and intrinsic engagement, resulting in lower autonomous motivation.

Conversely, cultural and personnel controls are expected to be better suited for low-contractibility environments because they do not rely on measurable outcomes or predefined behaviors. Cultural controls operate through shared norms, rituals, and collective identity, offering informal coordination when formal measurement is difficult or unreliable (Merchant and Van der Stede 2023). When goals and outcomes are uncertain, cultural alignment can help employees derive meaning and psychological ownership from their work. In such settings, cultural reinforcement can promote feelings of belonging and value congruence, thereby enhancing autonomous motivation.

Similarly, personnel controls – including selection, socialization, and training – are expected to enhance employee flexibility and judgment by equipping them with the skills needed to navigate complex or unexpected situations. These mechanisms help ensure that employees act in line with organizational values even in the absence of predefined behaviors or measurable outputs. In low-contractibility environments, personnel controls may strengthen autonomous motivation by supporting employees' sense of competence and enabling them to act in accordance with self-endorsed goals and values (Ryan and Deci 2000a).

Both cultural and personnel controls are therefore likely to foster autonomous motivation in contexts where formal controls are less feasible or meaningful. However, when objectives are clear and the link between behavior and outcomes is well understood, these control forms may be perceived as redundant or even restrictive.

Taken together, these arguments suggest that contractibility plays a decisive role in shaping how different controls affect autonomous motivation. While prior studies primarily link contractibility to performance and effectiveness, we extend this reasoning by examining its relationship with autonomous motivation as an individual-level outcome. Based on this reasoning, we formulate the following hypotheses:

*H5:* Contractibility positively moderates the relationship between results control and autonomous motivation (such that the negative association is weaker when contractibility is high).

*H6:* Contractibility positively moderates the relationship between action control and autonomous motivation (such that the negative association is weaker when contractibility is high).

*H7:* Contractibility negatively moderates the relationship between personnel control and autonomous motivation (such that the positive association is weaker when contractibility is high).

*H8*: Contractibility negatively moderates the relationship between cultural control and autonomous motivation (such that the positive association is weaker when contractibility is high).

## 3. Method

### 3.1. Empirical setting

The police are a *sui generis* organization within the public sector. This status requires a distinct legal and organizational structure, distinguishing the police from most other civil services. While the Minister of Justice and Security holds overall political and administrative responsibility, operational command lies with mayors for matters of public order and with public prosecutors for criminal investigations. This *sui generis* design enables the police to function effectively under a dual command structure, balancing national accountability with local and judicial authority. As a result, the police can act independently, yet within the rule of law, in service of public safety and justice.

Police functions are classified in the national job framework,<sup>1</sup> which distinguishes three domains: Leadership, Operational, and Support. The Leadership domain falls outside the scope of this study. The Operational domain covers all functions directly connected to core policing tasks such as law enforcement, investigation, and assistance, and includes specialist areas such as community policing, forensic investigation, security, intervention, and special operations. The Support domain consists of functions that enable policing activities, including HRM, finance, ICT, facilities, and training.

Within both Operational and Support domains, positions are differentiated by level of responsibility and pay scale. For example, in community policing (GGP), jobs range from Assistant GGP (scale 4) to Operational Expert GGP (scale 9). Support and specialist functions can extend to scale 14, depending on responsibility and expertise. In general, positions up to scale 9 correspond to secondary vocational education, positions in scales 10–12 to bachelor-level education, and positions from scale 13 upwards to master-level qualifications. Tasks also become less routinized and more discretionary at higher levels: lower-scale positions primarily follow protocols, mid-level positions involve case coordination, and higher-level experts or specialists increasingly exercise professional judgment and sometimes take on partial leadership responsibilities.

This context makes the Dutch National Police both similar to and different from other organizations. Like many public sector organizations, the police are hierarchically structured, operate under ministerial responsibility, and rely heavily on formal job classifications and standardized procedures. At the same time, its governance structure is more complex than that of most public

agencies, since operational authority is shared between political, judicial, and administrative actors. This “multiple principals” setting creates potential goal conflicts and makes management control more complicated than in many other public organizations. Compared to private sector organizations, the police are also distinctive because of the wide variety of tasks, ranging from highly standardized and routine to highly complex and judgment-based.

This variation in tasks is directly relevant to our study of contractibility. High-contractibility tasks are tightly codified in procedures and instructions, often relating to familiar problems for which standardized approaches already exist – for instance, registering an incident, processing a traffic violation, or following established forensic protocols. Low-contractibility tasks, by contrast, are difficult to prescribe in advance, as they involve novel, complex, or ambiguous situations. Examples include assessing threats in conflict situations, interacting with citizens with mental health problems, building trust in local communities, or developing new policy approaches.

### 3.2. Research approach

This study uses a survey-based, cross-sectional design. Data were collected within the Dutch National Police, in collaboration with the Police Research Unit of the Human Resources Department. Data were gathered between September and October 2024. Given the organization’s size – approximately 64,775 employees – it was not feasible to include the full population. Instead, a stratified random sample of 1,800 employees was drawn, using gender, organizational unit, and employment type as stratification criteria. Based on internal benchmarks, we anticipated a 25% response rate. Ultimately, 400 employees fully completed the questionnaire, resulting in a 22.5% response rate.

As shown in Table 1, the sample is representative of both the sampling frame and the overall population. Pearson  $\chi^2$  goodness-of-fit tests confirm that the distribution of respondents does not significantly differ from the population with respect to gender ( $\chi^2(1) = 0.34$ ,  $p = .56$ ), employment type ( $\chi^2(1) = 0.36$ ,  $p = .55$ ), or organizational unit ( $\chi^2(15) = 6.73$ ,  $p = 0.97$ ) supporting the validity of the sampling procedure.

We distributed the questionnaire digitally using an online survey tool. The three core constructs – management controls, autonomous motivation, and contractibility – were measured using validated scales from Van der Kolk et al. (2019), Trépanier et al. (2023), and Speklé et al. (2022a), respectively. The full survey instrument, including all measurement items and demographic questions in their original Dutch wording, and the data underpinning the analysis reported in this paper are deposited at the DANS Data Station Social Sciences and Humanities and are available at <https://doi.org/10.17026/SS/WEVHIG>.

**Table 1.** Demographic characteristics of the population, sample frame, and respondent sample.

|  | Population N = 64,775 | Sampling frame n = 1,800 | Sample n = 400 |
|--|-----------------------|--------------------------|----------------|
| <b>Gender</b>                            |                       |                          |                |
| Male                                     | 60%                   | 60%                      | 62%            |
| Female                                   | 40%                   | 40%                      | 38%            |
| <b>Employment type</b>                   |                       |                          |                |
| Sworn police officers                    | 67%                   | 61%                      | 65%            |
| Administrative/Technical/Support (ATS)   | 33%                   | 39%                      | 36%            |
| <b>Organisational unit:</b>              |                       |                          |                |
| Amsterdam                                | 9%                    | 8%                       | 8%             |
| The Hague                                | 10%                   | 11%                      | 12%            |
| Limburg                                  | 5%                    | 4%                       | 4%             |
| Central Netherlands                      | 8%                    | 7%                       | 7%             |
| North Holland                            | 6%                    | 4%                       | 6%             |
| Northern Netherlands                     | 6%                    | 5%                       | 5%             |
| East Brabant                             | 5%                    | 6%                       | 5%             |
| Eastern Netherlands                      | 11%                   | 9%                       | 12%            |
| Rotterdam                                | 10%                   | 9%                       | 8%             |
| Zeeland–West Brabant                     | 6%                    | 5%                       | 6%             |
| National Expertise and Operations        | 5%                    | 6%                       | 7%             |
| National Emergency Control Room          | 1%                    | 1%                       | 1%             |
| National Investigation and Interventions | 3%                    | 3%                       | 2%             |
| Police Academy                           | 2%                    | 4%                       | 2%             |
| Police Services Centre (PSC)             | 12%                   | 17%                      | 13%            |
| Staff of the National Police Leadership  | 1%                    | 1%                       | 2%             |

Notes: This table presents the demographic characteristics of the population (N = 64,775), the stratified sampling frame (n = 1,800), and the final respondent sample (n = 400). Stratification was based on gender, employment type (operational vs. administrative/technical/support), and organizational unit. Percentages reflect proportional representation within each group. The sample closely matches the population and sampling frame across all strata, indicating good representativeness.

### 3.3. Variables

This study includes six core constructs: results control (RES), action control (ACT), personnel control (PER), cultural control (CUL), autonomous motivation (AUT), and contractibility (CON). All constructs were measured using items from validated scales. The items of each instrument, as well as their factor loadings, VIF values, and consistency tests, are presented in Table 2.

The dependent variable, autonomous motivation (AUT), was measured using six items in line with Trépanier et al. (2023). All indicators showed statistically significant loadings. Internal consistency was strong, with Cronbach's alpha equal to 0.878 and composite reliability (CR) equal to 0.909. Convergent validity was also established, as the average variance extracted (AVE) reached 0.628.

The four main independent variables (RES, ACT, PER, and CUL) are based on the typology of management controls by Merchant and Van der Stede (2023). Our operationalization of these constructs draws on instruments from Van der Kolk et al. (2019). All four instruments were treated as formative constructs, implying that reliability measures such as Cronbach's alpha and CR are less relevant. For these constructs, almost all items had strong, significant weights on their respective dimensions, except RES4, which had a negative loading (−0.131). Since RES4 is part of a formative construct, it

was retained due to its theoretical relevance, following the guidance of Hair et al. (2022). All VIF values were below the critical threshold of 5, indicating no serious multicollinearity issues.

Like the independent variables, our moderator (CON) was specified as a formative construct. CON, drawn from Speklé et al. (2022a), consists of nine items. The variance inflation factors (VIFs) were all well below the commonly accepted threshold of 5. All factor loadings, except CON8, were significant. We retained CON8 due to its theoretical relevance.

As demographic covariates, we included gender, employment type, age, and salary scale. Gender was coded as a dummy variable (1 = female, 0 = otherwise). Employment type was coded as 1 for sworn police officers and 0 for support staff. Age was measured in categories and operationalized by assigning the midpoint value of each age category to respondents. The reported mean age of 47.1 years in Table 2 therefore reflects an approximate average derived from these category midpoints, rather than respondents' exact chronological age. (The underlying age distribution shows that 7% of respondents is aged 18–29, 33% is 30–44, 40% is 45–59, and 19% is 60 years or older, while fewer than 1% preferred not to report their age). Salary scale reflects the Dutch public sector pay structure, where each scale corresponds to a specific salary range. Higher scales indicate more senior positions and generally higher earnings.

**Table 2.** Factor loadings and instrument reliability.

| Item                               |  | Loadings | VIF   | CR    | CA    | AVE   |
|------------------------------------|--|----------|-------|-------|-------|-------|
| <b>Result controls (RES)</b>       |  |          |       | 0.597 | 0.518 | 0.312 |
| RES1                               | Clear result targets are set for employees.  | 0.591**  | 1.315 |       |       |       |
| RES2                               | Employee performance is measured.  | 0.469**  | 1.422 |       |       |       |
| RES3                               | Employees are rewarded for good results.   | 0.882**  | 1.144 |       |       |       |
| RES4                               | Employees are punished for poor results.   | -0.131   | 1.053 |       |       |       |
| RES5                               | Achieved results are rarely fed back to employees.                                     | 0.444**  | 1.094 |       |       |       |
| <b>Action controls (ACT)</b>       |  |          |       | 0.757 | 0.627 | 0.386 |
| ACT1                               | Following rules and procedures is important in our work.                               | 0.660**  | 1.165 |       |       |       |
| ACT2                               | Employees are hardly ever encouraged to follow rules and procedures.                   | 0.688**  | 1.216 |       |       |       |
| ACT3                               | Employees' work is recorded and/or monitored.  | 0.521**  | 1.211 |       |       |       |
| ACT4                               | Work plans and task divisions are used to manage employees.                            | 0.538**  | 1.271 |       |       |       |
| ACT5                               | Employees are responsible for the work they do.  | 0.679**  | 1.114 |       |       |       |
| <b>Personnel controls (PER)</b>    |  |          |       | 0.768 | 0.666 | 0.406 |
| PER1                               | Many training and educational opportunities are being offered.                         | 0.726**  | 1.394 |       |       |       |
| PER2                               | Employees have few opportunities to work independently.                                | 0.766**  | 1.199 |       |       |       |
| PER3                               | New hires receive extensive training and onboarding.                                   | 0.588**  | 1.395 |       |       |       |
| PER4                               | New hires are selected through a rigorous process.                                     | 0.442**  | 1.192 |       |       |       |
| PER5                               | Job and task descriptions are used to provide employees with clarity about their tasks | 0.615**  | 1.208 |       |       |       |
| <b>Cultural controls (CUL)</b>     |  |          |       | 0.809 | 0.711 | 0.459 |
| CUL1                               | Employees regularly give each other feedback, even without unsolicited                 | 0.596**  | 1.312 |       |       |       |
| CUL2                               | Norms and values are seldom communicated to employees.                                 | 0.704**  | 1.270 |       |       |       |
| CUL3                               | The prevailing culture ensures employees know what is expected of them.                | 0.665**  | 1.345 |       |       |       |
| CUL4                               | Employees check each other's work regularly  | 0.660**  | 1.346 |       |       |       |
| CUL5                               | Employees know what is expected of them through the supervisor's exemplary behavior.   | 0.755**  | 1.366 |       |       |       |
| <b>Contractibility (CON)</b>       |  |          |       | 0.854 | 0.846 | 0.449 |
| CON1                               | Our team's mission is clearly defined.   | 0.855**  | 3.083 |       |       |       |
| CON2                               | Our team's mission is actively discussed and promoted.                                 | 0.847**  | 3.056 |       |       |       |
| CON3                               | Our team's goals clearly align with the mission.                                       | 0.887**  | 3.843 |       |       |       |
| CON4                               | Our team's goals have been translated into measurable outcomes.                        | 0.729**  | 0.315 |       |       |       |
| CON5                               | Our team's performance can be assessed by the results achieved.                        | 0.728**  | 2.553 |       |       |       |
| CON6                               | The results of our team's work are visible within a year.                              | 0.638**  | 2.010 |       |       |       |
| CON7                               | My work requires following a logical sequence of steps.                                | 0.286**  | 1.408 |       |       |       |
| CON8                               | There is only one specific way to properly perform my work.                            | -0.083   | 1.271 |       |       |       |
| CON9                               | It is completely clear how I should do my work.  | 0.500**  | 1.258 |       |       |       |
| <b>Autonomous motivation (AUT)</b> |  |          |       | 0.909 | 0.878 | 0.628 |
| AUT1                               | ...because I find it important to put effort into this work.                           | 0.591**  | 1.406 |       |       |       |
| AUT2                               | ...because this work aligns with my personal values.                                   | 0.793**  | 2.367 |       |       |       |
| AUT3                               | ...because this work is meaningful to me.  | 0.851**  | 2.827 |       |       |       |
| AUT4                               | ...because I enjoy my work.  | 0.823**  | 2.774 |       |       |       |
| AUT5                               | ...because I find my work interesting.   | 0.860**  | 3.371 |       |       |       |
| AUT6                               | ...because I find my work challenging.   | 0.805**  | 2.567 |       |       |       |

Note: Loadings, composite reliability (CR), Cronbach's alpha (CA), average variance extracted (AVE), and variance inflation factors (VIF) are reported for all constructs. Loadings and reliability statistics for the measurement model are based on a PLS-SEM estimation, which is appropriate given the formative nature of several constructs. VIF values below 5 indicate acceptable multicollinearity. Loadings marked with \*\* are significant at  $p < .01$ . \*\*  $p < 0.01$ .

### 3.4. Analysis

To test our hypotheses, we estimated an OLS regression model in which autonomous motivation (AUT) is regressed on four types of management control – results control (RES), action control (ACT), personnel control (PER), and cultural control (CUL) – as well as on contractibility (CON) and interaction terms between CON and each control type. OLS was chosen because it provides consistent estimates in linear models and allows for the inclusion of categorical variables such as organizational units through dummy coding.

Respondents were nested within organizational units of the Dutch National Police ( $n = 16$ ). To account for unobserved heterogeneity across these units, we included unit-fixed effects, implemented as a set of unit-specific dummy variables. These fixed effects control for all time-invariant characteristics of organizational units that may systematically affect autonomous motivation but are not directly observed or measured.

Moderation effects were tested by including interaction terms between contractibility and each of the four management control types. In addition, we control for individual-level demographic characteristics, including

age, gender, employment type (sworn officer versus support staff), and salary scale.

The full regression model is specified as follows:

$$AUT_i = \beta_1 RES_i + \beta_2 ACT_i + \beta_3 PER_i + \beta_4 CUL_i + \beta_5 CON_i + \beta_6 (RES_i * CON_i) + \beta_7 (ACT_i * CON_i) + \beta_8 (PER_i * CON_i) + \beta_9 (CUL_i * CON_i) + \alpha_j + \gamma X_i + \varepsilon_i$$

The coefficients  $\beta_1$  to  $\beta_4$  capture the effects of the four control types (results, action personnel, and cultural control) on autonomous motivation. Moderation effects, corresponding to test Hypotheses 5 to 8, are assessed through the interaction terms  $\beta_6$  through  $\beta_9$ . The term  $X_i$  denotes a vector of individual-level demographic covariates, specifically the respondent's age, gender, employment type (sworn officer versus support staff), and salary scale;  $\alpha_j$  represent the unit-fixed effects.

To assess measurement quality and model robustness, several diagnostic checks were conducted. Discriminant validity was confirmed using the Fornell–Larcker criterion: for each construct, the square root of the AVE exceeded its correlations with all other constructs (see Table 3). To address potential common method bias, a Harman's single factor test showed that the first factor accounted for only 25.1% of the variance, well below the recommended 50% threshold (Podsakoff et al. 2003). Finally, variance inflation factors (VIFs) based on Model 4 were all well below the threshold of 5 (mean 1.74; maximum 2.74), indicating that multicollinearity is unlikely to bias the regression estimates. Overall, these results strengthen confidence in the validity of the constructs and the robustness of the regression analyses.

## 4. Results

### 4.1. Descriptive statistics

Table 3 presents the summary statistics and correlation coefficients for all variables included in the analysis. The dependent variable, autonomous motivation, has a mean of

4.12 and a standard deviation of 0.63, suggesting moderately high motivation across the sample, with some room for variation. The independent variables – result control, action control, personnel control, cultural control, and contractibility – are all measured as composite constructs with values ranging from 1 to 5. Despite the fact that all respondents work for the same organization, the Dutch National Police, there is substantial variation in how these controls and the degree of contractibility are experienced. Standard deviations range from 0.51 to 0.67, and the minimum and maximum values indicate that nearly the full theoretical range is observed across respondents.

This variation is important, as it suggests that different teams or units within the organization are subject to different forms and intensities of control and operate under varying levels of contractibility. This within-organization diversity offers a strong basis for examining the effects of control types and their interactions with contractibility on autonomous motivation.

The correlation matrix shows a few noteworthy patterns. Contractibility is moderately correlated with both result control and cultural control, suggesting that in contexts where tasks are more contractible, certain types of control may be more prevalent. Additionally, there is a significant correlation between some control types, notably between personnel and cultural control and between action and result control. These correlations underscore the importance of including all four control types in the regression analysis and of checking for multicollinearity to ensure the robustness of the results.

### 4.2. Main results

Table 4 presents the main regression results based on four model specifications. In all models, the dependent variable is autonomous motivation (AUT), and all construct variables have been standardized to facilitate interpretation. Column 1 reports the baseline model, which includes the four types of management control as well as contractibility as independent variables. Column 2 extends this model

**Table 3.** Summary statistics and correlation coefficients.

|                         | Descriptives |       |      |      |      | Correlations |        |         |        |        |         |         |         |      |    |
|-------------------------|--------------|-------|------|------|------|--------------|--------|---------|--------|--------|---------|---------|---------|------|----|
|                         | Mean         | SD    | Min  | Med  | Max  | 1            | 2      | 3       | 4      | 5      | 6       | 7       | 8       | 9    | 10 |
| 1 Autonomous motivation | 4.12         | 0.63  | 1.8  | 4.0  | 5.0  | 0.79         |        |         |        |        |         |         |         |      |    |
| 2 Result controls       | 2.86         | 0.54  | 1.4  | 2.8  | 4.2  | 0.16**       | 0.62   |         |        |        |         |         |         |      |    |
| 3 Action controls       | 3.69         | 0.51  | 1.8  | 3.8  | 5.0  | 0.22**       | 0.49** | 0.63    |        |        |         |         |         |      |    |
| 4 Personnel controls    | 3.09         | 0.67  | 1.4  | 3.2  | 5.0  | 0.26**       | 0.41** | 0.44**  | 0.67   |        |         |         |         |      |    |
| 5 Cultural controls     | 3.16         | 0.62  | 1.0  | 3.2  | 4.8  | 0.27**       | 0.48** | 0.44**  | 0.53** | 0.67   |         |         |         |      |    |
| 6 Contractibility       | 3.02         | 0.65  | 1.0  | 3.1  | 5.0  | 0.18**       | 0.50** | 0.43**  | 0.44** | 0.50** | 0.67    |         |         |      |    |
| 7 Age                   | 47.10        | 11.80 | 23.5 | 52.0 | 64.0 | -0.12*       | 0.02   | -0.01   | 0.10*  | -0.08  | 0.13**  | 1       |         |      |    |
| 8 Female                | 0.38         | 0.49  | 0    | 0    | 1    | 0.02         | 0.06   | 0.09    | 0.11*  | 0.08   | 0.14**  | -0.06   | 1       |      |    |
| 9 Salary scale          | 6.62         | 2.14  | 1    | 6    | 12   | 0.05         | -0.10* | -0.20** | 0.02   | -0.05  | -0.14** | 0.14**  | -0.07   | 1    |    |
| 10 Sworn police officer | 0.65         | 0.48  | 0    | 1    | 1    | 0.17         | 0.03   | 0.01    | -0.02  | 0.08   | -0.10   | -0.21** | -0.25** | 0.02 | 1  |

Notes: This table reports descriptive statistics (mean, standard deviation, minimum, median, and maximum) and Pearson correlation coefficients for all variables used in the analysis (n = 400). Diagonal values of multi-item constructs represent the square root of the average variance extracted ( $\sqrt{AVE}$ ). All multi-item constructs – Autonomous Motivation, Result Controls, Action Controls, Personnel Controls, Cultural Controls, and Contractibility – are measured on 5-point Likert scales. Binary variables (Female and Position) are coded as 0/1. Age was measured in categories; mid-point values were assigned to each category to approximate a continuous variable. Correlations are based on two-tailed tests; \* p < 0.05, \*\* p < 0.01.

by including interaction terms between contractibility and each of the control types to test for moderating effects. Column 3 adds controls for demographic characteristics, including age, gender, salary scale, and employment type. Column 4 presents the full model, which further includes unit-fixed effects to account for unobserved heterogeneity across organizational units.

The results reveal several consistent patterns. Results and action controls show no significant effects across the model specifications. By contrast, personnel control displays a robust and statistically significant positive association with autonomous motivation, underscoring the im-

portance of supportive HR-related management control practices such as training, onboarding, and clear role descriptions. Cultural control is significant in Models 1 and 2, but the effect disappears once demographic controls are added, indicating that the association is largely explained by differences between sworn officers and support staff.

With respect to moderation, the interaction between results control and contractibility is positive and statistically significant. This suggests that the (non-significant) negative association of results control with motivation weakens, and even becomes positive, when tasks are highly contractible, with clear goals and measurable outcomes. None of the other interaction terms (involving action, personnel or cultural control) reach statistical significance, implying that contractibility does not systematically moderate these effects.

Taken together, the findings provide partial support for our hypotheses. Among the main effects, personnel controls consistently enhance autonomous motivation. By contrast, cultural controls show no robust effect once differences in job roles are accounted for, while results and action controls have no direct relationship with motivation. Accordingly, we find no support for Hypotheses 1, 2, and 4, whereas Hypothesis 3 is supported. With respect to moderation, only the interaction between results control and contractibility is significant, providing support for Hypothesis 5. No significant moderating effects were observed for action, personnel, or cultural controls. Therefore Hypotheses 6, 7, and 8 are not supported.

**Table 4.** Main OLS-results.

|                           | DV = Autonomous Motivation |                 |                  |                  |
|---------------------------|----------------------------|-----------------|------------------|------------------|
|                           | (1)                        | (2)             | (3)              | (4)              |
| Result Controls (RES)     | -0.04<br>(0.11)            | -0.05<br>(0.11) | -0.06<br>(0.11)  | -0.04<br>(0.11)  |
| Action Controls (ACT)     | 0.18<br>(0.12)             | 0.18<br>(0.12)  | 0.20<br>(0.12)   | 0.17<br>(0.12)   |
| Personnel Controls (PER)  | 0.20*<br>(0.09)            | 0.21*<br>(0.09) | 0.23**<br>(0.09) | 0.23*<br>(0.09)  |
| Cultural Controls (CUL)   | 0.25*<br>(0.10)            | 0.25*<br>(0.10) | 0.16<br>(0.10)   | 0.13<br>(0.10)   |
| Contractibility (CON)     | 0.03<br>(0.09)             | 0.08<br>(0.09)  | 0.18<br>(0.10)   | 0.17<br>(0.10)   |
| RES * CON                 |                            | 0.33*<br>(0.16) | 0.31*<br>(0.16)  | 0.34*<br>(0.16)  |
| ACT * CON                 |                            | -0.07<br>(0.16) | -0.10<br>(0.16)  | -0.11<br>(0.16)  |
| PER * CON                 |                            | -0.03<br>(0.14) | 0.03<br>(0.14)   | 0.04<br>(0.15)   |
| CUL * CON                 |                            | 0.15<br>(0.12)  | 0.15<br>(0.12)   | 0.13<br>(0.13)   |
| Age                       |                            |                 | -0.01*<br>(0.00) | -0.01*<br>(0.00) |
| Female                    |                            |                 | 0.05<br>(0.10)   | 0.03<br>(0.10)   |
| Salary scale              |                            |                 | 0.04*<br>(0.02)  | 0.05*<br>(0.02)  |
| Sworn police officer      |                            |                 | 0.33**<br>(0.10) | 0.27*<br>(0.12)  |
| Fixed effects (org. unit) | No                         | No              | No               | Yes              |
| Constant                  | 0.00<br>(0.05)             | -0.07<br>(0.05) | -0.08<br>(0.26)  | -0.17<br>(0.31)  |
| Observations              | 400                        | 400             | 400              | 400              |
| R-squared                 | 0.096                      | 0.121           | 0.166            | 0.192            |

Notes: This table reports four OLS regression models estimating the effect of different types of management controls on autonomous motivation. Model 1 includes only the main effects of Result Controls (RES), Action Controls (ACT), Personnel Controls (PER), Cultural Controls (CUL), and the moderator Contractibility (CON). Models 2 through 4 add interaction terms between each control type and Contractibility. Model 3 includes demographic covariates (Age, Female, Salary Scale, and Position), and Model 4 additionally incorporates organizational unit fixed effects. All continuous independent variables (RES, ACT, PER, CUL, and CON) were standardized prior to analysis, and interaction terms were computed from these standardized variables. Categorical variables were dummy-coded: Female = 1 (0 = male/other), Position = 1 for sworn police officer (0 = administrative/support staff). Robust standard errors are reported in parentheses. \*  $p < 0.05$ , \*\*  $p < 0.01$ .

## 5. Conclusion and discussion

### 5.1. Conclusion

This study examined how different types of management controls relate to autonomous motivation among public sector employees, and how these relationships are shaped by contractibility. Prior work on public sector control suggests that traditional results- and action-oriented controls sit uneasily with value-driven public service work.

To refine these expectations, we introduced contractibility as a moderating condition, capturing the extent to which goals and outcomes are clearly defined and measurable. Higher contractibility was expected to condition the motivational implications of results and action controls, whereas under low contractibility personnel and cultural controls were expected to be more appropriate.

Our findings offer only partial support for these expectations. Personnel controls consistently show a positive association with autonomous motivation, regardless of task environment. Cultural controls show no robust overall effect once job differences are taken into account. We find no evidence that results or action controls systematically undermine autonomous motivation.

With respect to moderation, support for the role of contractibility is limited. Only the positive moderation between results control and contractibility is significant.

This suggests that results controls can be supportive of autonomous motivation in high-contractibility contexts, but are largely motivationally neutral when tasks are complex or outcomes intangible. No moderating effects were found for action, personnel, or cultural controls.

Overall, our study underscores the importance of aligning control system design to the characteristics of the task environment rather than assuming uniform motivational effects across contexts.

## 5.2. Theoretical implications

This study contributes to the literature on management control and motivation in the public sector by examining non-managerial staff within a single, large organization. Unlike prior research that largely focused on managers across diverse public-sector contexts (e.g., Verbeeten and Speklé 2015; Speklé et al. 2022a), our research design allows for a more fine-grained analysis of how different types of management control operate across roles that differ in contractibility, while holding institutional conditions largely constant.

Our findings qualify several expectations derived from earlier theory. Contrary to influential arguments suggesting that results controls inherently crowd out autonomous motivation, we find no systematic negative associations. Results controls are motivationally neutral on average and become positively associated with autonomous motivation only under conditions of high contractibility. This refines earlier contingency arguments (Speklé and Verbeeten 2014; Verbeeten and Speklé 2015) by showing that the motivational consequences of results controls depend on the clarity and measurability of task objectives rather than on sectoral characteristics *per se*.

Second, our results reveal important differences between control types. Personnel controls show a robust positive association with autonomous motivation across task environments, whereas cultural controls do not exhibit a consistent relationship once differences between jobs are taken into account. This suggests that control types differ in how directly they support employees' sense of autonomy and competence, even within the same organizational setting.

Third, the role of contractibility as a general boundary condition appears more limited than we initially assumed. Rather than shaping the motivational effects of management control more broadly, contractibility matters primarily for the effectiveness of results controls. This points to a more specific contingency logic, in which contractibility determines when results controls can be perceived as meaningful and supportive rather than constraining.

Compared to Speklé et al. (2022a), our findings reveal both convergence and divergence in observed empirical patterns. Speklé et al. (2022a) report that personnel and cultural controls are positively associated with engagement, which in turn relates to motivation. In contrast, we find that personnel controls are directly and robustly associated with autonomous motivation, whereas cultural

controls show no consistent association once job-level differences are taken into account. This suggests that personnel and cultural controls differ in their capacity to translate into motivational quality rather than into general involvement or attachment. Moreover, while Speklé et al. (2022a) do not explicitly examine outcome-based controls, our results show that results controls do not undermine motivation and may even support autonomous motivation under conditions of high contractibility.

Overall, these findings argue against simple prescriptions that advocate replacing outcome-based controls with alternative mechanisms in professional public-sector settings. Instead, they underscore the importance of aligning specific control types with the informational characteristics of the tasks to which they are applied.

## 5.3. Practical implications

From a practical perspective, these findings point to the need for a differentiated use of management controls in public organizations such as the Dutch National Police. Our results suggest that personnel controls have a consistently positive association with autonomous motivation and should therefore be prioritized across contexts. Results controls can also enhance autonomous motivation when tasks are routine and clearly defined, as they provide structure and measurable goals. Managers should therefore consider task characteristics when designing control systems and avoid applying uniform control approaches across diverse roles.

These recommendations are particularly relevant in the light of ongoing labor market challenges facing the Dutch National Police and other public organizations. Demographic shifts, rising replacement demand, and increasing workloads make it increasingly difficult to attract and retain qualified staff – resulting in higher absenteeism, increased turnover, and declining service quality (Sociaal Economische Raad 2023). Strengthening autonomous motivation offers a lever to address these challenges, as employees who experience autonomy, competence, and support tend to show greater engagement, well-being, and intrinsic motivation (Tadić et al. 2015; Van den Broek et al. 2021). Supporting such motivation is therefore not only a HR concern but a strategic imperative for sustaining the resilience and effectiveness of public service delivery.

## 5.4. Limitations and directions for future research

This study has three limitations that are especially relevant for interpreting the findings. First, we focused on autonomous motivation as the main outcome variable. Although this choice aligns with the framework of self-determination theory, management controls may also influence other forms of motivation, such as controlled motivation, or more distal outcomes such as performance. Prior research suggests, for example, that action controls may not strongly affect motivation but can nevertheless shape performance outcomes (Goto and Kuroki 2025).

Future studies could therefore extend our analysis by incorporating multiple motivational dimensions or linking management controls more directly to performance.

Second, the study was conducted in the context of the Dutch National Police, a unique setting that combines highly contractible with highly discretionary tasks. This makes it a particularly suitable case for studying the role of contractibility, but it also raises questions about the generalizability of the findings. Moreover, the specific characteristics of this setting may have limited the variation in control use or perceptions of motivation, which could help explain the absence of significant effects for certain control types. Replication in other public sector organizations – especially those with less variation in task characteristics – would be valuable to assess the broader applicability of the results.

Third, the study relies on self-reported survey data collected in a single wave. This approach introduces several methodological concerns commonly associated with survey-based research, including potential biases related to common method variance, perceptual inaccuracies, and social desirability (Speklé and Widener 2018). Furthermore, the cross-sectional design limits our ability to draw strong causal inferences or examine long-term dynamics between management controls, contractibility, and autonomous motivation. Although we took steps to mitigate these risks (e.g., ensuring anonymity and using validated scales), the use of a single-source, cross-sectional design may still bias the observed relationships. Future research could benefit from longitudinal designs or experimental methods, and the incorporation of multi-source data to address these limitations.

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## Note

1. The “Landelijk Functiegebouw Nederlandse Politie” or LFNP.

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