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LEVERS OF CONTROL AND PSYCHOLOGICAL MECHANISMS: INSIGHTS FROM AN INDIVIDUAL-LEVEL PERSPECTIVE

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Abstract: *This paper reviews and synthesises literature examining how Levers of Control, namely the belief systems, boundary systems, diagnostic controls, and interactive controls, can influence individual-level psychological and behavioural outcomes. This paper analyses the psychological mechanisms through which control systems shape employee experiences, including empowerment, motivation, sensemaking, role clarity, emotional responses, and stress. The synthesis reveals that belief and interactive controls are most consistently associated with positive psychological outcomes such as empowerment, creativity, learning, and proactive behaviour. In contrast, boundary and diagnostic controls have primarily been studied in relation to compliance and performance, with limited attention to their deeper psychological consequences. Notably, negative individual-level effects, including stress, reactance, pressure, and moral disengagement, remain largely unexplored across all levers. Based on these insights, the paper identifies key gaps and proposes a research agenda emphasising the need to investigate psychological effects of boundary and diagnostic controls, explore underexamined mechanisms such as emotions and intrinsic motivation, integrate multiple levers to examine their joint influence, employ longitudinal and experimental designs to establish causal pathways, and incorporate contextual and individual differences. By foregrounding psychological processes, the paper contributes to a more comprehensive micro-foundational understanding of management control systems and their influence on cognition, motivation, and behaviour in organisational settings.*

Keywords: *Levers of Control; management control systems; psychological empowerment; employee behaviour*

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Introduction

The Levers of Control (LOC) framework, introduced by Simons (1995), remains central to the study of management control systems (MCS). According to LOC, managers use four control levers: belief systems, boundary systems, diagnostic control systems, and interactive control systems to balance organisational demands: enabling innovation and strategic renewal, while maintaining control and goal achievement. Historically, research on LOC has primarily emphasised organisational-level outcomes, including how tools can be used to implement new strategies and stimulate the emergence of new ones (Henri, 2006). The use by the top management team serves as an antecedent to organisational capabilities that guide strategic choices (Henri, 2006). In uncertain environments, MCS help managers interpret information, manage strategic risk, and coordinate responses, thereby shaping how firms develop capabilities to address uncertainty and make strategic decisions. Strategic uncertainties and strategic risk factors may also influence the role of the control system (Widener, 2007). As uncertainty increases, the information deficit widens, leading to greater reliance on mechanisms that facilitate information processing (Widener, 2007). Similarly, the presence of strategic risk, potential events that could negatively impact the organisation's objectives, heightens the need for control systems to not only monitor performance but also anticipate and mitigate adverse outcomes.

Individual or employee actions can amplify adverse outcomes, as lapses in judgment, errors, or non-compliance with established procedures may increase the likelihood or impact of strategic risks. Note that control systems operate through individuals: employees and managers who interpret, respond to, and enact these controls. It is thus surprising that relatively few studies have systematically examined the psychological and behavioural mechanisms by which control levers influence individual cognition, motivation, and action. Without such micro-foundational understanding, the explanatory power of LOC remains limited, especially in contexts characterised by complexity, uncertainty, and rapid change.

Recent literature suggests a growing interest in the intersection of MCS and organisational behaviour. For instance, Matsuo, Matsuo, and Arai (2021) explore the influence of MCS on employees' behaviour at the middle-management level. Their studies include psychological empowerment and employees' proactive behaviour. Management control systems stimulate employees to actively explore opportunities and threats through dialogue, fostering competence, influence, self-determination, and engagement in meaningful tasks (Matsuo, Matsuo & Arai, 2021). The sense of psychological empowerment among the followers may lead to enhanced organisational commitment (Ibrahim et al, 2015).

Psychological empowerment refers to a psychological state reflected through four cognitive dimensions: meaning, competence, self-determination, and impact (Appuhami, 2017; Spreitzer, 1996). Meaning relates to the perception that one's work holds personal significance. Competence reflects an individual's self-efficacy and belief in their ability to perform tasks effectively. Self-determination captures the sense of autonomy in deciding how to initiate and carry out work. Finally, impact represents the extent to which a person feels capable of influencing outcomes and shaping work-related processes. There are a few studies that have investigated how control may impact psychological empowerment and learning, which in turn induce managers' organisational resilience and proactive behaviour. For instance, Kenamon et al. (2021) highlighted how the LOC affects employees' psychology. Accordingly, how LOC is used may enhance creativity by influencing cognitions related to psychological empowerment (Moulang, 2013). In fact, some studies, such as Appuhami (2017), highlighted how employees'

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psychology may influence the effectiveness of LOC. Despite previous studies on how organisational control may impact not only organisational behaviours but also individuals' behaviour (Cruz et al., 2022), these efforts are fragmented, evidence is limited, and no comprehensive review has yet mapped the psychological foundations that may underpin the effectiveness of LOC.

This paper aims to fill that gap by systematically reviewing literature that explicitly links LOC (or related MCS frameworks) to individual-level psychological or behavioural outcomes. Specifically, this conceptual paper seeks to answer the following research question:

- Which psychological and behavioural outcomes have been studied in relation to each lever of control?
- What psychological mechanisms (e.g., empowerment, motivation, sensemaking) are proposed or evidenced as mediators or moderators of these effects?
- Which levers, mechanisms, and outcomes remain underexplored or show inconsistent evidence?
- What are the critical gaps and directions for future research to build a robust micro-foundational understanding of LOC?

By synthesising existing literature through a psychological lens, this review bridges the gap between management control theory and organisational psychology. It provides an overview that identifies patterns and gaps in our understanding of how control systems impact individuals, proposes a research agenda to guide future empirical and conceptual work, and supports the design and evaluation of more human-centred control systems in practice.

Problem Statement

Despite extensive research on the LOC, there remains a limited understanding of how and why control systems influence individual behaviour within organisations. Existing studies have largely established relationships between LOC and organisational outcomes such as performance, innovation, and strategic alignment (Henri, 2006; Widener, 2007), yet the underlying mechanisms that drive these relationships are insufficiently explained.

A key problem in the literature is the overreliance on a macro-level perspective, where control systems are treated as formal structures that directly produce outcomes. This assumption overlooks the reality that control systems operate through individuals who interpret and respond to them differently. There are some ambiguities regarding managerial intention for controls and how employees perceive control (Tessier & Otley, 2012). As a result, the causal processes linking LOC to behavioural outcomes remain unclear, creating a theoretical gap in understanding how control systems actually function in practice (Tessier & Otley, 2012).

Moreover, prior research fails to adequately explain the variation in individual responses to the same control mechanisms. Although beliefs and interactive control systems are often associated with enabling outcomes, prior research suggests that the effects of control systems are contingent, shaped by their use and interpretation, and may simultaneously enable and constrain behaviour (Mundy, 2010; Tessier & Otley, 2012). The creation of dynamic tensions depends critically on managers' active attempts to balance the controlling and enabling uses of management control systems (Mundy, 2010). This suggests that individual-level factors, particularly cognitive and emotional processes, play a critical role in shaping responses to control systems. However, these psychological dimensions are rarely incorporated into LOC studies, leaving a "black box" between control design and employee behaviour.

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The central aim of the microfoundations research program is to unpack collective constructs by examining how individual-level factors influence organisations, how interactions among individuals give rise to emergent organisational outcomes, and how relationships between macro-level variables are mediated by micro-level actions and interactions (Abell, Felin, & Foss, 2008). The absence of a micro-foundational perspective at the individual level limits the theoretical development of LOC. Without specifying individual-level mechanisms, the framework remains largely descriptive and lacks a precise causal explanation. Integrating micro-foundations (Felin, Foss, & Ployhart, 2015) provides an opportunity to bridge this gap by linking organisational control systems with individual cognition and behaviour. Therefore, there is a clear need to address this problem by incorporating psychological mechanisms at the individual level into the LOC framework. This study responds to this gap by integrating LOC with psychological perspectives to explain how control systems influence individual behaviour through underlying cognitive and motivational processes. In doing so, it aims to advance a more comprehensive and theoretically grounded understanding of management control systems.

Literature Review

Management Control Systems and Individual Performance: A Psychological View

A substantial body of empirical work demonstrates that MCS shape individual performance through mechanisms that operate within the cognitive and motivational domains. For example, Sari et al. (2023) showed that MCS improve employee performance through the boundary system and diagnostic control system. These systems help by clarifying expectations and reducing ambiguity, an inherently psychological process linked to role clarity and perceived control. Hermawan et al. (2021) found that belief systems positively influence managerial performance by instilling shared meaning and purpose, which enhances motivation and commitment. The psychological perspective aligns with Hall (2008), who emphasised that comprehensive performance measurement systems enhance *role clarity* and *psychological empowerment*, both of which influence individual capability and willingness to perform. At the cognitive level, Henri (2006) highlighted that strategically aligned control systems foster learning and attention to strategic priorities, further influencing how individuals process information and make decisions.

MCS play a critical role in fostering psychological empowerment and enhancing employees' resilience within organisations (Beuren, et al (2022). The perception of MCS can enhance managers' knowledge of workplace operations and business strategies, and strengthen their ability to influence behaviour consequences (Hall, 2008). By providing clear guidelines, feedback mechanisms, and participative decision-making processes, MCS can enhance employees' sense of meaning, competence, and self-determination, thereby influencing the core dimensions of psychological empowerment. When employees understand how their actions contribute to organisational objectives and are given autonomy to make decisions within structured frameworks, they experience greater control over their work and feel more capable of influencing outcomes. This alignment between structured controls and employee autonomy not only improves task performance but also strengthens engagement, motivation, and overall organisational resilience. Thus, MCS, when applied interactively rather than merely diagnostically, can be a powerful tool to cultivate an empowered workforce.

These studies collectively highlight a crucial point: MCS may automatically affect individual performance, and this effect can also be mediated by the individual's cognitive interpretations and psychological responses.

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Psychological Empowerment as a Central Mechanism

Psychological empowerment has emerged as one of the most consistently supported mediators linking MCS with individual performance and behavioural outcomes. Drawing on Spreitzer's (1996) conceptualisation, meaning, competence, self-determination, and impact empowerment capture how individuals perceive their ability to influence and contribute to organisational goals. Research demonstrates that management control systems (MCS) can significantly impact psychological states, either enhancing or inhibiting them, depending on how they are designed and implemented. Strategic performance measurement systems have been shown to foster psychological empowerment, which in turn enables greater creativity and innovative behaviour among employees (Appuhami, 2017). Similarly, interactive MCS contribute to individual performance by promoting both psychological empowerment and proactive behaviour, encouraging employees to take initiative and engage more deeply with their tasks (Matsuo et al., 2021). Interactive performance measurement systems also strengthen feelings of competence, reinforcing the sense of empowerment that allows employees to act confidently within their roles (Kenamon et al., 2021). Furthermore, informal control mechanisms have been found to enhance job satisfaction by cultivating empowerment, demonstrating that both formal and informal systems shape how individuals experience their work and perceive their influence within the organisation (Cruz et al., 2022).

These studies validate the importance of examining MCS at the micro (individual) level, since empowerment is inherently a psychological and subjective phenomenon.

MCS and Cognitive–Motivational Processes

Several studies have expanded the psychological focus by examining MCS as systems that influence individual cognition, motivation, and behavioural intentions. For example, Moulang (2013) showed that performance measurement systems stimulate creativity by shaping cognitive appraisal and perceived empowerment. Like Hall (2008) on empowerment and role clarity, Moulang (2013) shows that interactive PMS use drives individual creativity by shaping behaviour. Similarly, Cruz et al. (2022) provide evidence that the use of management control systems enhances individual performance, with organisational learning acting as a mediator and feedforward mechanisms as a moderator, reinforcing the behavioural impact of controls at the micro level. Similarly, Cruz et al. (2022) provide evidence that the use of management control systems enhances individual performance, with organisational learning acting as a mediator and feedforward mechanisms as a moderator, reinforcing the behavioural impact of controls at the micro level. Ibrahim et al. (2015) highlighted that empowerment and transformational leadership interact to strengthen organisational commitment, further emphasising the psychological pathways between systems and behaviour.

Taken together, these studies illustrate that performance measurement systems operate across levels of analysis: from individual empowerment and creativity (Hall, 2008; Cruz et al., 2022) to organisational learning and performance (Widener, 2007).

Levers of Control and Behavioural Responses

Empirical research provides evidence that the LOC's components shape individual and organisational behaviour. For instance, an empirical analysis of survey data from 122 CFOs demonstrated that both the belief system and diagnostic control promoted organisational learning and the efficient use of managerial attention (Widener, 2007). In a public-sector context, Nazaruddin and Hasna (2023) examined whether belief-control systems influenced service motivation through psychological empowerment among civil servants in Yogyakarta,

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Indonesia. Their findings revealed that the relationship was not significant, underscoring that the impact of control levers may vary across institutional and cultural settings. By contrast, Phan et al. (2023), drawing on survey data from 337 Australian organisations, found that the use of belief systems and interactive controls was positively associated with organisational capabilities such as resilience and workplace flexibility. These capabilities, in turn, translated into higher organisational performance, pointing to a pathway through which control levers shape collective behaviours and outcomes.

Simons' (1995) original framework also suggested that interactive controls help organisations manage strategic uncertainty, but later work demonstrates strong psychological and behavioural implications. Nazaruddin and Hasna (2023) found that belief control systems do not directly impact individuals' motivation to deliver efficient public services. However, interactive controls, which foster frequent communication, dialogue, and shared learning, may have been particularly influential in individual-level research (Nazaruddin & Hasna, 2023). For example, Matsuo et al. (2021) found that interactive control use enhances proactive behaviour, which indicates that individual-level behavioural outcomes are linked to autonomy and self-initiation. Meanwhile, Beuren et al. (2020) showed that MCS strengthen resilience by empowering individuals to adapt to challenges. Comprehensive performance measurement systems are often associated with interactive control use. Hall (2008) demonstrates that such systems can shape individual behaviour by enhancing managers' role clarity and psychological empowerment, thereby indirectly improving managerial performance. His findings underscore that rich and relevant performance information enables managers to feel more competent, autonomous, and informed in their roles.

These findings reinforce the view that LOC mechanisms may shape individual behaviour by influencing cognition and motivation, thereby enhancing performance, creativity, and resilience.

The Rationale for Individual-Level Examination

Although MCS are organisational instruments, their effectiveness depends heavily on individual-level interpretation. Multiple authors highlight that organisational performance is ultimately the aggregated outcome of how *individuals* respond to control systems. Studies such as Zakaria (2021) further illustrate this point in public-sector contexts, showing that individual accountability and understanding of controls predict organisational performance. Additionally, as evidenced by Cruz et al. (2022), who investigated the effects of informal controls and psychological empowerment on job satisfaction, found that when employees perceive controls as supportive rather than restrictive, they experience higher levels of empowerment and job satisfaction. This behavioural perspective is reinforced by Moulang and Cahan (2015), who show that performance measurement systems stimulate psychological empowerment and creativity at the individual level by providing autonomy and meaningful feedback. Extending this to collective outcomes, Beuren et al. (2020) demonstrate that interactive management control systems foster both individual empowerment and organisational resilience by encouraging participation, dialogue, and shared problem-solving

The psychological lens is therefore critical because it highlights the mechanisms through which management control systems (MCS) influence individual behaviour and performance. The effects of MCS are mediated by individual cognition and perceptions, including clarity, understanding, and the meaning employees derive from their work. Motivational responses, such as psychological empowerment and organisational commitment, determine whether

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control systems function as enabling tools or as restrictive constraints. Moreover, behavioural outcomes, including creativity, proactivity, and learning, emerge directly from these individual psychological states shaped by MCS. Variation in how individuals perceive and respond to the same control system helps explain why identical systems can produce different outcomes across employees, teams, or organisational contexts, underscoring the importance of examining MCS through a psychological and individual-level perspective.

The Psychological impact of Management control systems

The psychological impact of management control systems can be understood through multiple theoretical lenses. Self-Determination Theory (Deci & Ryan, 2000) suggests that employees are motivated when their needs for autonomy, competence, and relatedness are satisfied; in LOC, beliefs and interactive systems can enhance intrinsic motivation by providing meaningful guidance and engagement, while diagnostic and boundary controls can also support competence and autonomy when feedback and rules are perceived as clear and constructive.

Cognitive appraisal theory (Lazarus & Folkman, 1984) posits that individuals interpret environmental demands as either challenges or threats, depending on their appraisal of the situation and available coping resources. Applied to LOC, employees may perceive diagnostic and boundary controls as supportive challenges or as restrictive threats, which helps explain variability in individual responses to these control systems. Behavioural ethics literature (Trevino et al., 2000) emphasises that ethical decision-making is shaped by organisational context and situational cues. Within the LOC framework, control systems can influence not only performance but also employees' ethical behaviour, as the signals embedded in beliefs, boundary, diagnostic, and interactive controls guide perceptions of acceptable conduct.

Besides stress and burnout research (Maslach & Leiter, 2008), it could indicate that excessive diagnostic or boundary controls may increase stress and burnout. In contrast, beliefs and interactive systems can buffer these effects by promoting support and clarity. Together, these perspectives illustrate how LOC influences employee behaviour through micro-level psychological mechanisms, highlighting that the effects of control systems are contingent on individual perceptions, interpretations, and context.

This reinforces the need for research that examines MCS not only as structural or technical systems but as psychological tools that influence how individuals think, feel, and behave.

Methodology

Because of the heterogeneity in designs, contexts, and outcomes across studies linking MCS/LOC to psychological and behavioural variables, we adopt an integrative review approach, as outlined by Torraco (2016), rather than a meta-analysis. The review followed a structured approach by drawing on seminal works, prior reviews, and recent studies in management and psychology. The relevant articles were prioritised to explain the coverage of both the theoretical foundations and recent developments in the field (Whittemore & Knafl, 2005). Such reviews are valuable for capturing the complexities of a phenomenon, including underlying psychological processes (Whittemore & Knafl, 2005). In this context, research on the psychological foundations of LOC focusing on how belief systems, boundary systems, diagnostic controls, and interactive controls influence individual cognition, motivation, and behaviour has gained increasing attention. However, the mechanisms through which these control systems shape employees' attitudes, empowerment, and performance remain underexplored, highlighting a key gap for further investigation.

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This paper searched multiple academic databases and domain-specific accounting and management journals. Studies that explicitly reference the four levers of control (or Simons' MCS framework) and examine individual-level psychological, behavioural, or perceptual outcomes (e.g., empowerment, stress, innovation behaviour, psychological well-being, learning, ethical behaviour, job satisfaction). Both empirical (quantitative, qualitative, mixed-methods) and conceptual/theoretical works were considered. This study draws on a targeted review of relevant literature on Levers of Control and psychological mechanisms. Key sources were identified from seminal works, prior reviews, and recent studies in management and psychology. This review focuses on widely cited and influential articles to provide comprehensive coverage of both the theoretical foundations and recent developments in the field.

The data extraction process included a title and abstract screening to identify relevant studies and a full-text review to confirm inclusion. The relevant studies were then extracted for relevant information to be analysed and included in this study. Given variation in constructs, measures, and contexts, we use narrative synthesis. Studies are grouped by two themes: the lever(s) studied (belief, boundary, diagnostic, interactive) and psychological or behavioural mechanisms or outcomes (e.g., empowerment, motivation, stress, creativity, proactive behaviour). Finally, we were able to identify the patterns, convergences, divergences, and gaps, and based on these findings.

Findings of the studies

Based on the research methodology outlined in the previous section, this study aimed to conceptualise responses to each research question. The key findings are summarised as follows:

Which psychological and behavioural outcomes have been studied in relation to each lever of control?

LOC demonstrates that different levers are associated with distinct psychological and behavioural outcomes, though the level of analysis (individual vs organisational) varies across studies. Belief systems have been linked to increased meaning-making, organisational commitment, and motivation by providing employees with a sense of purpose and alignment with strategic goals (Hermawan et al., 2021; Sari et al., 2023). At the individual level, however, findings are mixed: Nazaruddin & Hasna (2023) found no significant effect of belief systems on service motivation via psychological empowerment among Indonesian public servants, suggesting contextual variation. At the organisational level, Phan et al. (2023) showed that belief systems (and interactive controls) strengthen resilience and flexibility, thereby enhancing performance. Boundary systems primarily function to constrain behaviour and reduce role ambiguity, supporting clarity and perceived control but showing less evidence of fostering proactive behaviour (Widener, 2007). Subsequent research has reinforced this restrictive yet stabilising role. For example, Rifa, Febrinaldi, and Zaitul (2016) found that boundary systems positively impacted organisational performance in a hospital context by clarifying codes of ethics and reducing risks.

Diagnostic controls (such as performance measurement systems) influence goal clarity, accountability, and task-related motivation. Hall (2008) demonstrated that comprehensive PMS enhance managerial role clarity and psychological empowerment, indirectly improving individual performance. Interactive controls have consistently been associated with psychological empowerment, proactive behaviour, creativity, and learning, as they encourage dialogue, information sharing, and engagement in strategic issues (Matsuo et al., 2021;

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Kenamon et al., 2021). Cruz et al. (2022) further show that informal controls combined with empowerment enhance job satisfaction, while Moulang (2013) highlight how PMS stimulate empowerment and creativity. Beuren et al. (2020) extend this to collective outcomes, showing that perceptions of control foster both individual empowerment and organisational resilience through participation, dialogue, and involvement in decision-making.

What psychological mechanisms are proposed or evidenced as mediators or moderators of these effects?

Several psychological mechanisms have been proposed or empirically evidenced as mediators of the effect of LOC on individual outcomes. Psychological empowerment encompassing meaning, competence, autonomy, and impact is the most frequently studied mediator, linking belief systems and interactive controls to enhanced creativity, proactive behaviour, and performance (Spreitzer, 1996; Matsuo et al., 2021). Role clarity mediates the effects of diagnostic controls on performance by reducing ambiguity and enhancing perceived control (Hall, 2008). Sensemaking and cognitive meaning-making are critical mechanisms through which belief systems influence commitment and motivation, enabling employees to interpret organisational objectives that guide behaviour (Hermawan et al., 2021). Other moderators or mediators suggested in the literature include organisational support, trust, and leadership style, which can amplify or attenuate the psychological impact of control systems on individual outcomes (Ibrahim et al., 2015; Cruz et al., 2022).

Which levers, mechanisms, and outcomes remain underexplored or show inconsistent evidence?

Despite growing research, several gaps remain. Boundary systems are less studied at the individual psychological level; most research focuses on their constraining function rather than potential effects on motivation or learning. Similarly, the interaction between levers, for instance, how diagnostic and interactive controls jointly influence empowerment or proactive behaviour, is underexplored. While psychological empowerment is well-established as a mediator, other mechanisms, such as emotional responses, intrinsic motivation, and stress perception, have received less attention. Outcomes such as resilience, adaptive performance, and long-term learning are also underexplored, particularly in non-Western contexts or in public-sector organisations. Some evidence is inconsistent regarding whether diagnostic controls enhance creativity; their effects appear highly context-dependent and mediated by how individuals perceive autonomy and trust in the system.

What are the critical gaps and directions for future research?

To build a robust micro-level understanding of Levers of Control (LOC), future research should address several key areas. First, boundary systems and diagnostic controls need to be examined at the individual psychological level, including their potential positive effects on motivation, learning, and adaptive behaviour. Second, the integration of multiple levers should be explored to understand how belief systems, interactive controls, and diagnostic controls jointly influence psychological mechanisms and outcomes. Third, research should expand beyond empowerment to investigate other psychological mechanisms, such as emotional responses, intrinsic motivation, stress, and cognitive appraisal. Fourth, longitudinal and experimental designs are needed to establish causal relationships and capture the temporal dynamics of how management control systems affect psychological states and behaviour. Fifth, contextual and individual differences, including personality, culture, and leadership style, should be considered to explain why the same control system can produce different outcomes across employees or organisational settings. Finally, underexplored outcomes such as resilience, adaptive

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performance, and long-term creativity, particularly in non-Western and public-sector organisations, warrant further investigation to provide a more comprehensive understanding of individual-level effects of LOC.

In sum, while the literature increasingly recognises the importance of individual-level and psychological mechanisms, there is a need for more nuanced, integrative, and dynamic research designs that capture how levers of control shape employees' minds, motivations, and behaviours over time.

Discussion

Research on LOC demonstrates that each lever is associated with distinct psychological mechanisms that shape individual-level outcomes. Belief systems, for example, primarily influence meaning-making, sensemaking, and psychological empowerment, providing employees with a sense of purpose and alignment with organisational goals. These mechanisms translate into enhanced motivation, organisational commitment, creativity, and proactive behaviour. Boundary systems, in contrast, emphasise role clarity, perceived control, and risk awareness, which support compliance, reduce ambiguity, and improve task performance. While these levers effectively guide behaviour, they appear less potent at fostering proactive or innovative actions than belief and interactive systems.

Diagnostic controls primarily operate through role clarity, goal clarity, and perceived accountability, influencing task performance, productivity, and goal-oriented behaviour. Their effects on creativity and empowerment are inconsistent, often depending on employees' perceived autonomy and the organisational context. Interactive controls strongly promote psychological empowerment, autonomy, engagement, and sensemaking, which in turn lead to positive outcomes such as creativity, learning, proactive behaviour, job satisfaction, and overall individual performance. Across all levers, empowerment, role clarity, and sensemaking are the most frequently studied mediators, but other psychological processes such as stress, emotional responses, and intrinsic motivation remain underexplored.

Despite the advances in understanding individual-level effects of LOC, several research gaps persist. Boundary and diagnostic systems are less studied from a psychological perspective, with most research focusing on their constraining or performance-monitoring functions. Interactions between levers, such as how belief and interactive systems jointly influence empowerment or proactive behaviour, are underexamined. Methodologically, most studies rely on cross-sectional surveys and self-reported measures, limiting causal inference and temporal insights. Qualitative, mixed-methods, longitudinal, and experimental designs are needed to capture better how different levers influence psychological mechanisms and behavioural outcomes over time and across diverse contexts. Expanding research in these directions will provide a more nuanced, micro-level understanding of how LOC shapes employees' cognition, motivation, and behaviour.

The table below provides a concise summary of each LOC, the associated psychological mechanisms, observed individual-level outcomes, and research gaps:

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Lever of Control	Psychological Mechanisms (Mediators/Moderators)	Observed Individual-Level Outcomes	Research Gaps / Underexplored Areas
Belief Systems	Meaning-making, sensemaking, psychological empowerment, commitment	Motivation, organisational commitment, creativity, and proactive behaviour	Interaction with other levers; emotional responses; long-term effects; cross-cultural studies
Boundary Systems	Role clarity, perceived control, risk awareness	Compliance, reduced ambiguity, and task performance	Positive psychological effects (motivation, learning) are underexplored; negative effects (stress, reactance)
Diagnostic Controls	Role clarity, goal clarity, and perceived accountability	Task performance, productivity, accountability	Effects on creativity are inconsistent; interaction with interactive controls, and emotional responses are underexplored
Interactive Controls	Psychological empowerment, autonomy, engagement, sensemaking	Creativity, proactive behaviour, learning, individual performance, job satisfaction	Mechanisms beyond empowerment (stress, intrinsic motivation); boundary/diagnostic interactions

Apart from this, it would be worth noting that the limited attention to negative outcomes (stress, burnout, moral risk) is a major limitation in the literature. Without understanding these, we risk endorsing control designs that may optimise short-term performance at the cost of long-term well-being and organisational sustainability.

Furthermore, the preponderance of cross-sectional survey designs limits causal inference. Longitudinal, multilevel, and mixed-method studies are needed to unpack how perceptions of control evolve, and how individual differences (e.g., values, personality, cultural background) moderate psychological responses.

The findings of this study have important implications for both theory and practice. From a theoretical perspective, integrating LOC with established psychological frameworks, such as Self-Determination Theory (SDT), is essential for understanding the microfoundations of management control systems. Such integration enables a deeper understanding of how control mechanisms shape individual cognition, motivation, and behaviour, moving beyond purely structural or organisational-level analyses. Self-Determination Theory (Deci & Ryan, 2000) emphasises that individuals are motivated when their needs for autonomy, competence, and relatedness are satisfied. In the context of LOC, beliefs and interactive systems can foster intrinsic motivation by providing employees with meaningful guidance and opportunities for engagement. Diagnostic control systems, which monitor performance against standards, can

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enhance competence when feedback is seen as constructive rather than punitive. Similarly, boundary systems, by clarifying acceptable behaviours and limits, can support both autonomy and competence by providing clear guidelines and reducing uncertainty.

From a practical standpoint, managers should design control systems that strike a balance between structure and autonomy. In particular, interactive and belief systems can be leveraged to empower employees, foster engagement, and enhance proactivity. At the same time, boundary and diagnostic controls should be applied judiciously to provide necessary guidance without stifling motivation or creativity. This psychologically-informed approach to MCS design can improve both individual-level outcomes and overall organisational effectiveness.

Limitations and Suggestions for Future Research

This review has several limitations that should be acknowledged. First, the included studies are relatively limited and heterogeneous, with varying constructs and measurement approaches, which precluded conducting a meta-analysis; instead, a narrative synthesis was employed. Second, the empirical evidence is geographically concentrated in certain regions, which may limit the generalizability of the findings to other contexts. Third, publication bias is a potential concern, as studies reporting positive effects of interactive or enabling controls may be more likely to be published than those documenting negative consequences. Finally, psychological constructs in the reviewed studies are predominantly measured through self-report, and objective measures of psychological strain, well-being, or actual behaviour remain rare, highlighting the need for more robust and multi-method approaches in future research.

Based on the synthesis, we propose a research agenda to investigate the psychological foundations of Levers of Control (LOC), with a focus on individual levers. Future studies should examine the potential negative psychological outcomes associated with specific levers, such as stress, burnout, perceived threat, reactance, ethical risk, moral disengagement, and turnover intentions, which may arise particularly under diagnostic and boundary controls. Empirical research should also extend beyond interactive systems to include belief, boundary, and diagnostic levers, exploring their distinct psychological mediators and moderators, such as empowerment, role clarity, and sensemaking. Longitudinal and multilevel designs are recommended to capture how individual psychological reactions to each lever evolve, for example, during organisational change, crises, or periods of growth and downsizing. Mixed-methods and qualitative approaches can provide deeper insights into how employees experience and interpret each lever, including identity formation, moral reasoning, and lived experiences of control. Additionally, research should broaden its scope to include SMEs, non-profits, informal organisations, and cross-cultural samples, and highlight how context shapes individual responses to each lever. Finally, integrating established psychological theories, such as self-determination theory, cognitive load theory, sensemaking, organisational justice, and behavioural ethics. It is hoped that this can advance robust micro-foundational models that explain how belief, boundary, diagnostic, and interactive systems uniquely influence individual cognition, motivation, and behaviour.

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