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Learning to Change: A Goal-Directed Perspective on Evidence-Based Rehabilitation

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ABSTRACT *Despite widespread calls to make prisons more rehabilitative, issues such as aggression, substance use, and recidivism remain pervasive. Evidence-based practices in correctional settings have struggled to deliver consistent improvements, partly due to weak theoretical and empirical foundations. Many programs rely on theories focusing on distal outcomes like recidivism that do not specify how behaviour arises from interacting goals, beliefs, and contexts. This review examines the stagnation of evidence-based rehabilitation and how to enhance it by grounding practice in contemporary psychology. We identify three challenges: the replication and generalisability crisis, the mapping problem between theory and outcomes, and structural and institutional barriers to implementation. Building on recent cognitive accounts of behaviour, we outline a framework that reconnects behavioural evidence with the processes it seeks to change. We conclude with recommendations for practice: supporting adaptive inference chains, strengthening coherent self-models, aligning environments with predictive learning, and embedding psychological expertise across institutional levels.*

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1 LEARNING TO CHANGE: A GOAL-DIRECTED PERSPECTIVE ON EVIDENCE-BASED REHABILITATION

Despite a growing consensus that prisons should shift from punitive to rehabilitative environments, behavioural problems remain pervasive and difficult to manage within correctional settings (Ward & Maruna, 2007). Rates of aggression, self-harm, substance use, and recidivism remain high, while staff burnout and turnover are widespread (Brown et al., 2017; Fazel et al., 2016). These issues are fundamentally behavioural, relating to how individuals act, react, and adapt within the specific social and institutional context of incarceration. Therefore, understanding and changing behaviour is pivotal for effective prison policy and practice.

Yet, evidence-based behaviour change approaches that build on robust scientific insights into the determinants of behaviour are still rarely implemented in prisons (Blackaby et al., 2023; Gannon & Ward, 2014). Interventions are often developed or adapted on an ad hoc basis, guided more by institutional tradition, political pressures, or intuitive reasoning than by robust empirical evidence (Day et al., 2012; Latessa et al., 2020). In daily practice, prison staff often rely substantially on personal experience to manage complex behaviour, and policy decisions may be shaped by the implicit beliefs of administrators rather than by behavioural science, even as rehabilitative cultures and new institutional models (e.g., detention houses) evolve (Liebling, 2011; Milićević, 2025). As a result, a substantial gap persists between what is known about behaviour and how behavioural problems are actually addressed in correctional settings.

Existing studies on behavioural change in prisons are limited in both quantity and quality. Few studies are grounded in robust theoretical frameworks, and many lack experimental control, adequate follow-up, or replication (Beaudry et al., 2021). Furthermore, the outcomes typically emphasised, such as recidivism, are broad and distal, making it challenging to infer which behavioural mechanisms actually changed. This narrow focus detracts progress from intermediate targets such as impulse control skills or goal alignment, which are crucial for sustained behavioural change (Bonta & Andrews, 2023; Ward & Fortune, 2016).

In this paper, we examine why evidence-based practices have struggled to take root in prison settings and why existing evidence often fails to translate into effective interventions. Established frameworks such as the *Risk-Need-Responsivity (RNR) model* (Bonta & Andrews, 2023) and the *Good Lives Model (GLM)* (Ward et al., 2025) provide robust principles for identifying criminogenic needs and structuring rehabilitative goals, and recent theoretical work has further clarified dynamic risk, explanatory targets, and the translation of causal theories into correctional practice (Heffernan & Ward, 2017; Prujean et al., 2022; Ward & Durrant, 2021, 2022). However, these developments stop short of specifying a formal generative account of how behaviour is produced by moment-to-moment

inferential processes. Without such a process model, the pathway from theoretical principles to concrete intervention techniques can remain underspecified. We propose that articulating cognitive processes more explicitly can strengthen the translation of established correctional theories into everyday practice. We therefore advance a framework to guide future evidence-based practice in prisons that is grounded in contemporary cognitive models of behaviour and complements current approaches.

2 WHY EVIDENCE-BASED PRACTICE STRUGGLES IN PRISONS

Although the importance of evidence-based practice is widely acknowledged (Penal Reform International, 2025), its implementation in correctional settings remains limited. Decades of research have produced promising psychological models and interventions, yet few have been consistently applied or rigorously evaluated in prisons. In this section, we outline three major reasons for this disconnect: (1) the fragility of the current evidence base and its underspecified mechanisms for behaviour change, (2) persistent mapping problems between what is trained and what is measured, and (3) structural and institutional barriers that hinder sustainable translation of behavioural science into practice.

2.1 Fragile Evidence, Underspecified Mechanisms, and Cognitive Barriers to Implementation

A first reason for the limited success of evidence-based rehabilitation lies in the fragility and limited applicability of the scientific foundations on which current interventions rest. Psychological science has undergone a series of self-examinations, often described as the replication, generalisability, and practicality crises, that together expose the gap between experimental research and effective real-world application.

The replication crisis revealed that many established psychological effects fail to reproduce under rigorous testing conditions, often due to small samples, publication bias, and analytic flexibility (Open Science Collaboration, 2015). Findings that appeared robust in the laboratory, such as priming effects, ego depletion, or even attitude-behaviour correlations, frequently vanish in pre-registered or multi-lab replications (e.g., Hagger et al., 2016). This undermines confidence in the stability of the evidence base on which applied interventions, including those in correctional settings, have been built.

The generalizability crisis extends this concern beyond reproducibility. Many psychological studies rely on narrow, convenience samples, typically consisting of Western, educated, industrialised, rich, and democratic (WEIRD)¹ participants (Henrich et al., 2010). Moreover, these studies are usually conducted under highly controlled laboratory conditions. Such contexts differ profoundly

¹ The acronym WEIRD was introduced by Henrich et al. (2010) to demonstrate the fact that the majority of research samples in the behavioural sciences comes from this specific group of individuals, despite the fact that this group represents an outlier rather than the norm.

from the social, motivational, and environmental dynamics within prison. As Yarkoni (2022) and others have noted, the problem is not just that results may fail to replicate, but that they may never have been generalisable in the first place. When interventions derived from such research are transplanted into correctional environments, they often fail to capture the complexity of incarcerated individuals' lived experiences, social hierarchies, and long-term motivational structures.

Many influential prison studies rely on small samples, quasi-experimental designs, or historically contingent settings that cannot be ethically or practically replicated, undermining their generalizability (Haney & Zimbardo, 2009). Empirical research in prisons is further limited by ethical constraints, restricted access, administrative gatekeeping, and researchers' own cognitive and institutional biases against engaging with highly regulated and restrictive carceral environments (Liebling, 2001; Roberts & Indermaur, 2007). Although some studies include control groups, these groups are typically unmatched in key variables such as education and socio-economic status, limiting the validity of inferences regarding effects observed in incarcerated samples (e.g., Meijers et al., 2018). Moreover, the prison literature is heavily skewed toward U.S. samples, despite the exceptional nature of the American penal system in terms of incarceration rates, racial disparities, sentencing practices, and institutional violence (Western, 2006; Wacquant, 2009). This U.S.-centrism limits cross-cultural validity and obscures how institutional, legal, and sociohistorical factors shape cognition and behaviour in detention contexts elsewhere.

Thirdly, the practicality crisis concerns the limited relevance of much psychological theorizing for guiding interventions or policy (Lilienfeld, 2017; Tackett et al., 2019). Many dominant models, such as the "Theory of Planned Behaviour" (Ajzen, 1991) or the "Transtheoretical Model" (Prochaska & DiClemente, 1983), describe correlates of behaviour such as attitudes or intentions but provide little mechanistic insight into how behaviour emerges or changes. Although these models may help identify determinants of behaviour, they remain too abstract to guide intervention design. They rarely specify how these determinants relate to behaviour in specific contexts or how these contexts can be shifted to impact this behaviour. For example, while positive attitudes toward lawful employment may increase intentions to seek work, such models do not explain how those intentions are maintained or overridden in situations involving peer pressure or short-term incentives. As Ward and Durrant (2022) highlight in their "black box analysis of correctional psychology", programmes are often evaluated in terms of whether they produce effects, but without a mechanistic understanding of why and how, it is difficult to replicate or sustain behavioural change. As a result, prison-based programmes may combine general motivational or cognitive techniques without a clearly specified rationale for when, why, or for whom they should work.

Another reason why evidence-based principles are rarely adopted in correctional systems lies in human cognition itself. Like everyone, decision-

makers in correctional systems may rely on intuitive beliefs shaped by their personal experiences. Research on belief bias and confirmation bias indicates that people tend to evaluate information based on whether it fits with their pre-existing views rather than its evidential strength (Evans et al., 1983; Mercier & Sperber, 2011; Nickerson, 1998; Pennycook & Rand, 2019). Because such beliefs are central to how individuals predict and control behaviour, they are resistant to change, especially when new evidence threatens autonomy or professional identity (Hornsey & Fielding, 2017). Consequently, correctional institutions often remain guided by practices that “feel right” rather than those that are empirically validated.

2.2 Mapping Problems and the Dominance of Recidivism

A central obstacle to evidence-based rehabilitation in prisons is the mapping problem: a mismatch between what is theorised, what is measured, and what is ultimately evaluated. Within psychological science, measures often fail to capture the constructs they are meant to represent (Borsboom, 2006). In correctional psychology, this internal mismatch is compounded by a second layer: the outcomes used to assess success rarely align with the processes that interventions actually target. Most prison studies assess proximal indicators such as attitudes, intentions, or readiness to change, whereas programme effectiveness is judged by distal and highly aggregated outcomes such as recidivism (Butts & Schiraldi, 2018; McGuire, 2013). This disconnect prevents a coherent accumulation of evidence about how behavioural change occurs. Even when programmes influence behavioural processes that are central to sustained desistance, such as impulse control, moral reasoning, or empathy, these intermediate outcomes are often invisible in the final evaluation metrics. Using a medical analogy, it is akin to judging a treatment solely by whether patients show any sign of illness, ignoring improvements in the mechanisms of recovery, such as immune function or metabolic health. In a related vein, Ward and Durrant’s (2022) “black box model” highlights the risk of evaluating correctional interventions solely in terms of outcomes without specifying or assessing the underlying mechanisms of change.

Recidivism, generally defined as committing a new criminal offense after previous conviction or incarceration, epitomises this mapping problem. Although it appears simple and policy-relevant, this metric is suboptimal in several ways. First, recidivism is shaped by numerous external factors beyond the direct scope of prison interventions. Access to social support (Breese et al., 2000; Kjellstrand et al., 2023), neighbourhood characteristics (Kubrin & Stewart, 2006), and employment opportunities (Holzer et al., 2002; Visher et al., 2010) all strongly influence reoffending. Consequently, a decrease in recidivism may reflect favourable life circumstances rather than genuine change in the processes targeted by an intervention, whereas relapse can occur despite important progress at other levels.

A further complication is definitional inconsistency. Some studies count arrests, others convictions or reincarcerations, and legal definitions differ across countries (Yukhnenko et al., 2020). Despite this heterogeneity, recidivism rates dominate international comparisons of correctional performance. This reliance may persist largely because of administrative convenience and the entrenched punitive logic of “success versus failure”. However, such reliance distorts the policy environment: interventions rise or fall based on a binary criterion that tells us little about the mechanisms underlying change (National Academies of Sciences, Engineering, and Medicine, 2022; Ubah, 2014).

The consequence is a deep misalignment between what is trained and what is measured. For example, a programme may successfully strengthen impulse control, as evidenced by improved performance in structured role-plays or reduced aggressive responses in supervised settings. Yet these process-level improvements may not be reflected in recidivism statistics, which aggregate diverse contextual influences beyond the intervention’s scope. An individual may show meaningful gains in impulse control and yet still reoffend due to an interaction of other factors such as unstable housing, unemployment and criminogenic peer networks (e.g., Kjellstrand et al., 2021; Visher et al., 2010). As a result, changes in the targeted behavioural mechanisms do not map directly onto the distal outcome used to judge programme success.

Effective evidence-based rehabilitation requires theoretically specified and context-sensitive outcomes that map directly onto the processes targeted by intervention, an emphasis that is also central to evidence-based practice frameworks (Spring & Neville, 2011). Without such alignment, evidence cannot accumulate and theory cannot inform practice. Addressing this impasse calls for frameworks that explicitly link theory, behavioural targets, and institutional context, a challenge taken up in the next section.

2.3 Structural and Institutional Barriers

Even when robust and theoretically grounded findings exist, their translation into correctional practice is obstructed by structural and institutional barriers. Implementing evidence-based programmes requires sustained collaboration between researchers, practitioners, correctional staff, prison directors, and policymakers, yet current funding and governance systems have rarely supported such iterative partnerships (Fixsen et al., 2005). Research incentives favour novelty over replication and incremental refinement, leaving few mechanisms for evaluating, adapting, and maintaining interventions once they reach applied settings (Munafò et al., 2017).

The temporal and institutional distance between research and practice further compounds the problem. By the time interventions are adopted into policy, the supporting evidence base may already be outdated or contextually mismatched (Cartwright & Hardie, 2012). Correctional agencies, in turn, operate under intense political, operational, and administrative pressures that prioritise short-term,

quantifiable outcomes, such as reductions in incidents, recidivism, or costs, over sustained behavioural and cultural change (Liebling & Crewe, 2013). As a result, programs are often implemented prematurely, evaluated inadequately, and replaced before cumulative evidence can develop.

At the organizational level, prisons are typically hierarchical and risk-averse institutions that discourage experimentation and adaptive learning (Day et al., 2012). Limited staff training, high turnover, chronic overcrowding, periodic labour strikes, and scepticism toward psychological expertise further erode fidelity and continuity in implementation (Penal Reform International, 2025). These obstacles mirror broader challenges in implementation science: the absence of an infrastructure that supports ongoing feedback loops between research and practice (Fixsen et al., 2005). In some areas of healthcare, learning health system models have been developed to embed continuous evaluation and iterative refinement into routine practice (Friedman et al., 2017). Such sustained infrastructures remain comparatively underdeveloped in many correctional contexts. Without them, both the science and practice of rehabilitation remain fragmented, and promising theoretical insights fail to achieve durable impact.

3 A NEW FRAMEWORK FOR EVIDENCE-BASED REHABILITATION: BRIDGING THEORY, INTERVENTION, AND OUTCOME

A key challenge in rehabilitation science is the limited specification of the cognitive processes through which behavioural change occurs within existing frameworks. Models such as the RNR approach and the GLM offer key guidance for identifying criminogenic needs and shaping rehabilitative goals. However, they do not offer a formal account of the inferential mechanisms through which goals, beliefs, and contextual representations are translated into action in specific situations. Many interventions are based on implicit or fragmented ideas about broad constructs like motivation, habits, or self-control without a clearly articulated cognitive process model linking these constructs to observable behavioural change, making it difficult to design effective programs or evaluate their impact. What is needed is a practical framework that makes these cognitive mechanisms explicit, linking them to intervention strategies and measurable outcomes, while remaining grounded in the institutional realities of correctional settings.

3.1 The Goal-Directed Predictive Processing Framework

One promising framework that can help bridge theory, intervention, and evaluation is the *Goal-Directed Predictive Processing (GDPP)* framework. This framework builds on recent developments in psychology and cognitive (neuro)science that view the mind as a prediction system (Friston, 2010; Clark, 2016) and was developed in an attempt to integrate the most robust findings in psychology, such as prominent evidence about the belief-based (Ajzen, 1991;

Kube & Rozenkrantz, 2021) and goal-directed (Locke & Latham, 2006; Moors et al., 2017) nature of behaviour.

The core idea is that people continuously generate predictions about what they will experience and how they themselves will behave, and these predictions determine behaviour. This approach rejects the notion that behaviour results from a series of arbitrary decisions made by some internal agent or *homunculus*. Instead, behaviour is viewed as the emergent result of structured inferences within a dynamic belief system. These behaviour predictions constitute causal inferences grounded in the beliefs that are activated within the current situation, with a special role for self-concept beliefs such as beliefs about wanted outcomes or goals. When incoming sensory signals violate momentary predictions, the system registers a prediction error and evaluates which belief update would minimise future uncertainty. This belief updating process follows a principled mechanism: it favours revisions that minimise overall incoherence or uncertainty in the belief network, particularly in relation to superordinate beliefs governing self-representation and goal hierarchies.

This model helps explain why harmful behaviours often persist despite long-term negative consequences. When a behaviour is expected to reduce incoherence in one's belief system, it may be predicted and enacted even when it conflicts with certain long-term goals. In correctional settings, such predictions may often emerge from belief structures shaped by prior adversity, fragmented goal hierarchies, or survival-based narratives. The GDPP framework may help make these dynamics visible, allowing interventions to target the beliefs and inferences that underlie behaviour.

Mechanisms of Behavioural Change

Within the GDPP framework, behavioural change is understood as a process of belief updating that alters the predictions individuals make about their own future actions. People act in ways that confirm what they expect of themselves and when experience repeatedly contradicts positive expectations, their predictive model of "who I am and what I do" will adapt. Within this perspective, primary human goods, as described in the GLM, can be understood as higher-order value beliefs that organise the predictive system and guide action selection. Rehabilitation, in this sense, involves helping individuals revise the inferential structures that link beliefs and behaviours so that their future predictions become more coherent with social norms and long-term well-being.

This updating unfolds through several interrelated mechanisms. First, change begins with the integration of meaningful self-concept related beliefs such as beliefs about who they are and what goals they strive for. These beliefs provide the top-down structure that shapes predictions about the behaviour that is relevant for them. In correctional settings, individuals may sometimes operate with fragmented goal hierarchies, dominated by short-term goals such as seeking momentary control. Research on desistance from crime (Maruna, 2001) shows that sustainable rehabilitation is more likely when individuals develop a coherent,

prosocial self-narrative. Interventions that support this process, such as through perspective-taking, narrative reconstruction, or social validation, can help build the required motivational scaffolding.

Second, when relevant goals are activated, individuals make inferences about action-outcome relationships, essentially asking themselves: “If I act this way, what will follow?”. This process aligns with the agent–action–context structure articulated in the Black Box model (Ward & Durrant, 2022). Harmful behaviours can persist when people have learned causal models that seem internally consistent with these behaviours, e.g., “aggression earns respect”, or “substance use relieves tension”. GDPP reframes these fixed beliefs as contextual predictions, which allows them to be changed based on new evidence. Consistent with evidence-based practice such as in therapeutic contexts (Beck, 2011; Hofmann et al., 2012), interventions can help participants test and revise these inferences in structured contexts. This relates to the well-established role of self-efficacy beliefs in behaviour change: when individuals infer that change can lead to desirable outcomes, they are more likely to pursue relevant changes.

Finally, because predictive models are continuously shaped by context, behaviour change must be supported by feedback from the environment. The responses of staff, peers, institutional structures, communities, and society as a whole either confirm or contradict the new inferences participants form. For example, useful day planning is often cited as a key component of effective rehabilitative practice (Bonta & Andrews, 2023; Lipsey et al., 2007; McNeill et al., 2005). From a GDPP perspective, its impact lies not merely in keeping individuals occupied, but in the belief updates it facilitates: by engaging in structured activities, individuals begin to infer that their actions can produce predictable, positive outcomes (“I can contribute something”, “I have useful skills”, “People respond to me differently”). Environments that consistently reinforce these new predictions may help consolidate adaptive belief structures (Blagden et al., 2014). In contrast, unpredictable or punitive settings may reintroduce uncertainty and reactive behaviour loops. This mechanism resonates with the responsivity principle within the RNR framework, which emphasises delivering interventions in contexts, ideally community settings, where adaptive behaviours can be reinforced and generalised (Bonta & Andrews, 2023). It also accords with the well-established role of self-efficacy beliefs in behaviour change: as individuals begin to infer that their actions can produce desirable effects, their confidence in positive outcomes, and thus the likelihood of change, increases (Bandura, 1997).

4 RECOMMENDATIONS FOR PRACTICE

The GDPP framework suggests that effective rehabilitation depends on reshaping the inferential structures through which people predict their own behaviour in context. From this perspective, behaviour change arises when individuals revise their belief networks and the behaviour predictions those networks generate based

on the process of uncertainty reduction. This view has several implications for correctional practice.

4.1 Support Adaptive Inference Chains

Interventions should focus on how individuals infer which actions are likely to satisfy their goals, an emphasis that resonates with the GLM's focus on pursuing primary human goods, rather than merely "punishing" unwanted behaviour. Harmful actions may reflect predictions about how to restore control or reduce uncertainty (Friston et al., 2017). For example, aggression may express the belief that dominance secures safety, or substance use could express the belief that relief from distress is only achievable chemically. Rehabilitation should therefore help participants construct alternative inference chains and embed these in their existing belief networks. This aligns with RNR-informed efforts to reduce cognitive distortions and with GLM-inspired approaches aimed at strengthening individuals' capacities to pursue prosocial goods.

Practically, this means (a) identifying current beliefs and goals, (b) proposing plausible alternative inferences that are compatible enough with the present network to be considered, and (c) progressing in graded steps (scaffolded within the learner's "zone of proximal development"; Vygotsky, 1978) (Van Dessel & Boddez, 2025). For example, a participant who believes that "asserting dominance prevents victimization" might be guided to test alternative predictions, such as whether consistent rule-following or alliance-building can also enhance safety, through structured role-play and supervised social interactions. Because belief networks are often deeply entrenched, this process requires thoughtful, step-by-step progression that respects the structure of the existing belief system while gradually introducing alternative predictions. The structure of belief networks reflects both individuals' learning histories and evolutionarily shaped motivational architectures that organise goal domains and recurrent concerns (Del Giudice, 2022).

In criminological frameworks, familiar neighbourhoods or antisocial peers are described as risk factors because they increase the likelihood of reoffending. From a GDPP perspective, these factors function as contextual cues that reactivate prior predictions. Even after new inferences are formed, returning to old settings may trigger beliefs that were once adaptive, such as "this person will betray me" or "I need to show dominance to stay safe". Conversely, protective factors can be understood as contexts that stabilise and reinforce newly formed predictions. Interventions should therefore also target context resilience: the ability to recognise and override outdated predictions in relevant contexts when they are no longer helpful.

4.2 Strengthen Supportive Self-Concept Beliefs

Sustained change requires a coherent, future-oriented self-concept that anchors behavioural predictions (Clark, 2016; Hohwy, 2013). Within the GDPP

framework, self-concept beliefs function as higher-level beliefs that generate expectations about one's own likely actions and outcomes. When individuals lack a positively integrated sense of who they are, harmful behaviour becomes a self-confirming outcome: if a person predicts that they will offend, that prediction guides behaviour generation in ways that make offending the expected and enacted outcome, thereby confirming and stabilizing the underlying self-concept belief. Interventions that foster a positive and coherent self-concept, such as through narrative identity work, agency reflection, and perspective taking, can stabilise this predictive system and make adaptive actions more expected and self-consistent. This perspective parallels the criminological distinction between primary and secondary desistance (Maruna, 2001). Primary desistance refers to the observable cessation of criminal behaviour. Secondary desistance, in contrast, involves an internal identity shift: genuine reintegration follows when people not only refrain from crime but also come to predict themselves as non-offending individuals, for whom criminal behaviour is no longer compatible with their new self-concept.

4.3 Align Environments with Predictive Learning

Because belief networks are updated through experience, the environment must provide consistent evidence for adaptive inferences. Institutional routines, incentives, and staff interactions should therefore reinforce the expectations that behaviours such as related to cooperation, honesty, and self-regulation lead to outcomes that the individual values (Gendreau et al., 2006). Within the GDPP framework, sustained change depends on minimizing prediction error between new beliefs and lived experience: if adaptive behaviours are not reliably rewarded or modelled, old predictions will quickly reassert themselves (Bonta & Andrews, 2023. Bouton, 2004; De Houwer & Hughes, 2020).

Rehabilitation should thus be embedded in daily prison practices so that interactions consistently provide confirmatory feedback that helpful beliefs and behaviours “make sense”. GDPP thus underscores the ethical responsibility of institutions to avoid reinforcing maladaptive predictions that may ultimately impair reintegration, what some have described as the unintended “damage” of detention settings.

This recommendation may seem contradictory to the fundamental nature of prison: an environment where rules are typically imposed, personally valued outcomes are often restricted (such as social connection, access to preferred work or education, feeling safe and competent, etc.), and autonomy is minimal. Such conditions cultivate a mental model optimised for control and compliance or passivity. This model, that may have been functional during incarceration, becomes maladaptive once released: ex-incarcerated individuals must suddenly navigate a world requiring capacities that were neither encouraged nor practiced inside prison. Detention houses, such as promoted by the European movement

RESCALED² (RESCALED, 2024), may provide a more favourable environment for predictive learning, as they suggest three core principles for detention of the future: small-scaled, differentiated, and community-integrated. For example, a person might learn to predict that taking a walk outside to calm down after a conflict better aligns with their emerging self-concept than responding aggressively. Because what coheres with one person's self-concept differs from another's; incarcerated people need opportunities to test strategies that are personally meaningful. In traditional prison settings, such opportunities are limited (e.g., incarcerated people can often not leave their cell to take a walk). A detention house, by contrast, may allow incarcerated people to experiment with prosocial strategies in realistic settings, receive personalised feedback, and update behaviour based on meaningful outcomes, thereby supporting adaptive inference chains.

This perspective does not replace RNR- or GLM-based therapeutic principles, which already emphasise responsivity, capacity building, and the pursuit of prosocial goods. Rather, GDPP specifies the environmental conditions under which these principles are most likely to consolidate into durable predictive structures. Realizing these conditions may require more fundamental institutional reform, including movement toward detention-house models, which will take time. In the meantime, substantial improvements can be achieved within existing prisons by systematically aligning daily practices with adaptive belief updating. In this sense, correctional psychology faces a dual challenge: to work toward more humane, belief-supportive environments while simultaneously optimizing rehabilitation within existing prisons.

4.4 Cultivate Psychologically Informed Institutions

Prisons are not neutral spaces, but dynamic predictive systems: the expectations of staff shape those of imprisoned individuals, and vice versa. When officers consistently anticipate resistance or deceit, they may act defensively, unintentionally eliciting the very reactions they fear (Liebling & Arnold, 2004). A GDPP perspective highlights that these reciprocal expectations are themselves institutional predictions—beliefs about how people will behave that guide action at the systemic level. This reframes well-established responsivity and social learning principles within a predictive architecture, clarifying how staff expectations become part of the learning environment that shapes behavioural inference.

To promote adaptive cycles, prison environments should therefore be deliberately informed by psychological evidence about the determinants of behaviour (Day et al., 2012). Staff training can help personnel identify how their

² RESCALED is a European movement that advocates for an alternative to traditional prison systems: small-scale, differentiated, and community integrated detention houses. This model has been adopted and developed across more than 20 countries. The movement's ultimate mission is to replace all large prison institutions with a more rehabilitative justice system that promotes inclusivity, safety, and sustainability, benefiting both incarcerated individuals and society as a whole.

own expectations influence inmates' responses and replace intuitive reactions with evidence-based, goal-aligned practices. While intuitive beliefs will always play a role, it is essential to examine which expectations support constructive behaviour and which reinforce maladaptive cycles. Training should therefore not only offer general guidelines but also help individuals reflect on their own belief patterns and develop more adaptive, personalised inference strategies (see Linthout et al., 2025, for an example). Embedding psychological expertise across all roles, consistent with RNR principles of responsivity and social learning, may enhance the fidelity of implementation by making the predictive processes through which staff behaviour shapes institutional climate explicit. In this way, GDPP may not assist in replacing established correctional frameworks, but in supporting their consistent and psychologically informed application.

4.5 Evaluate Relevant Behaviours and Beliefs in Context

Within the GDPP framework, rehabilitation should be evaluated by examining whether people act and reason differently in contexts that matter for their daily lives. Because behaviour arises from goal-directed predictions, change can only be demonstrated by looking at the specific actions and beliefs that an intervention targets. Evaluations should therefore assess whether participants display new, context-appropriate behaviours, such as negotiating rather than reacting aggressively, or seeking support rather than avoiding conflict, and whether their underlying beliefs and goals have shifted accordingly.

This also addresses a common problem in evaluation practice: the mismatch between what interventions implicitly train, sometimes vague notions like self-control, and what is measured, typically distal outcomes such as recidivism. Measures should instead reflect the psychological processes being targeted. These might include behavioural indicators (e.g., cooperative responding), self-reported beliefs (“I can earn respect through collaboration”), or observed choices that reveal updated inferences about which actions are effective. Such belief-sensitive measures ensure that evaluation remains anchored to the intervention's theoretical basis and clarify what change actually looks like in daily practice. Importantly, these measures can also capture how individuals represent and pursue primary human goods in context, by assessing the belief structures, such as self-concept beliefs, goal representations, and action–outcome expectations, through which they shape daily behaviour.

By contrast, global outcomes such as recidivism offer little insight into why people change or persist and in what way (Kennedy et al., 2024). While such statistics may serve administrative or comparative purposes at the policy level, they are too distal and unspecific to guide evidence-based practice. Evaluating context-relevant behaviours and beliefs closes this gap: it aligns the level of measurement with the level of intervention, ensuring that what counts as “success” reflects genuine learning and adaptive prediction within the lived prison environment.

4.6 Ethical and Integrative Rationale

Finally, GDPP complements existing rehabilitation models such as the GLM and the RNR framework by clarifying the cognitive processes through which values, goals, and needs are represented and updated in context. While GLM articulates the normative importance of primary human goods and RNR identifies criminogenic needs and responsivity principles, GDPP operates at a different level of analysis: it explains how such goods and needs are realised within belief networks and translated into context-sensitive actions. In this sense, GDPP does not offer a competing philosophy, but a process-level account that may strengthen the psychological coherence and implementation of established correctional frameworks.

This perspective also reframes the ethical purpose of rehabilitation. From a GDPP standpoint, promoting agency, coherence, and psychological stability are not abstract ideals but prerequisites for sustainable behaviour change. When individuals experience themselves as capable of effective action (agency) and as consistent with their environment and values (coherence), their predictive models become less dominated by uncertainty and avoidance. This in turn supports well-being and reduces maladaptive cycles of prediction and control. In this sense, evidence-based rehabilitation is both a scientific and an ethical project: it seeks to create conditions under which people can accurately predict, and thus genuinely change, their own behaviour.

Crucially, this also implies a shift in how problematic behaviour is understood. As previously outlined, the prison environment may shape predictive models focused on control and compliance, making certain behaviours functionally adaptive within the detention context but maladaptive after release. For instance, a belief such as “raising my voice restores control” may have helped reduce uncertainty and preserve status in prison, even if it later leads to conflict or job loss. GDPP emphasises that such behaviours are not irrational, they are predictions that made sense in a particular environment. Rehabilitation should therefore not aim to fix a broken person, but to support belief revision in a way that respects prior adaptations while preparing for new contexts. This view aligns with recent developments in domains such as addiction (Heather et al., 2017) and chronic illness (Karoly, 2021; Kiverstein et al., 2022), where behaviours like avoidance or passivity are increasingly understood as rational responses to internal models shaped by experience. Across these fields, effective change does not involve imposing “normal” behaviour, but equipping individuals to revise and update their own predictive models toward personally and socially meaningful goals.

Importantly, such belief revision unfolds within environments that may themselves generate new instability. Prisons are often characterised by chronic stress, limited autonomy, interpersonal tension, and high rates of mental health difficulties. These conditions can continuously reshape predictive models, sometimes reinforcing withdrawal, hypervigilance, or substance use as locally

coherent responses. A GDPP-informed approach therefore cannot assume stable progress; it must incorporate ongoing monitoring and iterative recalibration of belief structures in response to environmental change. Rehabilitation in this sense is not a linear transition from “maladaptive” to “adaptive” behaviour, but a dynamic process that unfolds under conditions of uncertainty and institutional constraint. While the central target remains the restructuring of belief networks, the stability of such restructuring depends on whether environmental inputs consistently support, rather than undermine, emerging adaptive predictions.

5 FUTURE DIRECTIONS AND CONCLUSION

Advancing evidence-based rehabilitation requires continued conceptual refinement and empirical precision. Future work should examine more closely how belief systems give rise to behaviour in prison contexts, and how interventions can effectively reshape these beliefs toward adaptive, goal-consistent action. This includes examining how personal and institutional belief networks interact, and how environments can be designed to support constructive learning rather than reactive control.

Empirically, studies should test interventions that target specific belief updates and behavioural predictions, linking observed behaviour directly to the cognitive and behavioural processes they are designed to influence. Such designs will clarify which elements of an intervention actually change how people think, decide, and act. This approach would allow correctional programs to be evaluated in terms of mechanisms of change, rather than distant outcomes like recidivism, making the evidence more interpretable and actionable.

Conceptually, frameworks such as Goal-Directed Predictive Processing can help structure this endeavour by providing a coherent account of how goals, beliefs, primary human goods, and contextual conditions interact to produce behaviour. While GLM articulates the normative importance of primary goods and RNR identifies criminogenic needs and responsivity principles, GDPP contributes a process-level specification of how such goods and needs are realised within predictive belief structures and translated into context-sensitive action. Yet, the broader message extends beyond any single model: evidence-based rehabilitation must integrate robust scientific evidence with the lived realities of correctional environments. By grounding correctional practice in robust psychological theory, prisons can move from managing behaviour to understanding it, and from enforcing compliance supporting sustainable, context-sensitive change. In doing so, they can become environments where rehabilitation is not an exception, but a default trajectory.

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