# 33rd IAPCT Conference

INTERNATIONAL ASSOCIATION FOR PERCEPTUAL CONTROL THEORY IAPCT.ORG

ONLINE: OCTOBER 12-14 2023

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| | 1:15 PM | Hugo Cristo | Helping spread PCT in South Ametica |
| | 1:30 PM | Masaru Kanesuki | PCT in Japan |
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* Please check https://www.iapct.org/events/2023-conference/ for other time zones.

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| | 1:15 PM | Lydia Morris, Isabeau Tindall, Warren Mansell | Reorganisation of Conflict scale: Measuring the mechanism of psychological change |
| Session 2<br>*Mental Health* | 1:55 PM | Susan McCormack | Method of Levels (MOL) to explore the lived experiences of veterans in construction |
| | 2:15 PM | Lydia Morris & Cassie Eastham | Developing and evaluating training for family care partners to enhance communication and relationships between carers and people living with dementia |
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| | 3:30 PM | Eva de Hullu | Reorganisation looks different at every level in the hierarchy |
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| | 7:15 PM | Brian D'Agostino | Sources and dynamics of the self: PCT, Psychoanalysis, and the control of self-image |

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| Day 3 – October 14 | | | |
|---|---|---|---|
| **Activity** | **UTC*** | **Presenter** | **Title** |
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| Session 1<br>*PCT Conversations* | 3:15 PM | | Open Conversations about PCT |
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| | 5:00 PM | John Kirkland, Mike Saywell, Mike Smith, David Bimler | Conditions of Learning: territory and habitat |
| Session 3<br>*Remembering Martin Taylor* | 6:00 PM | | Open conversation |
| IAPCT Annual Meeting | 6:30 PM | | For IAPCT members and interested parties |

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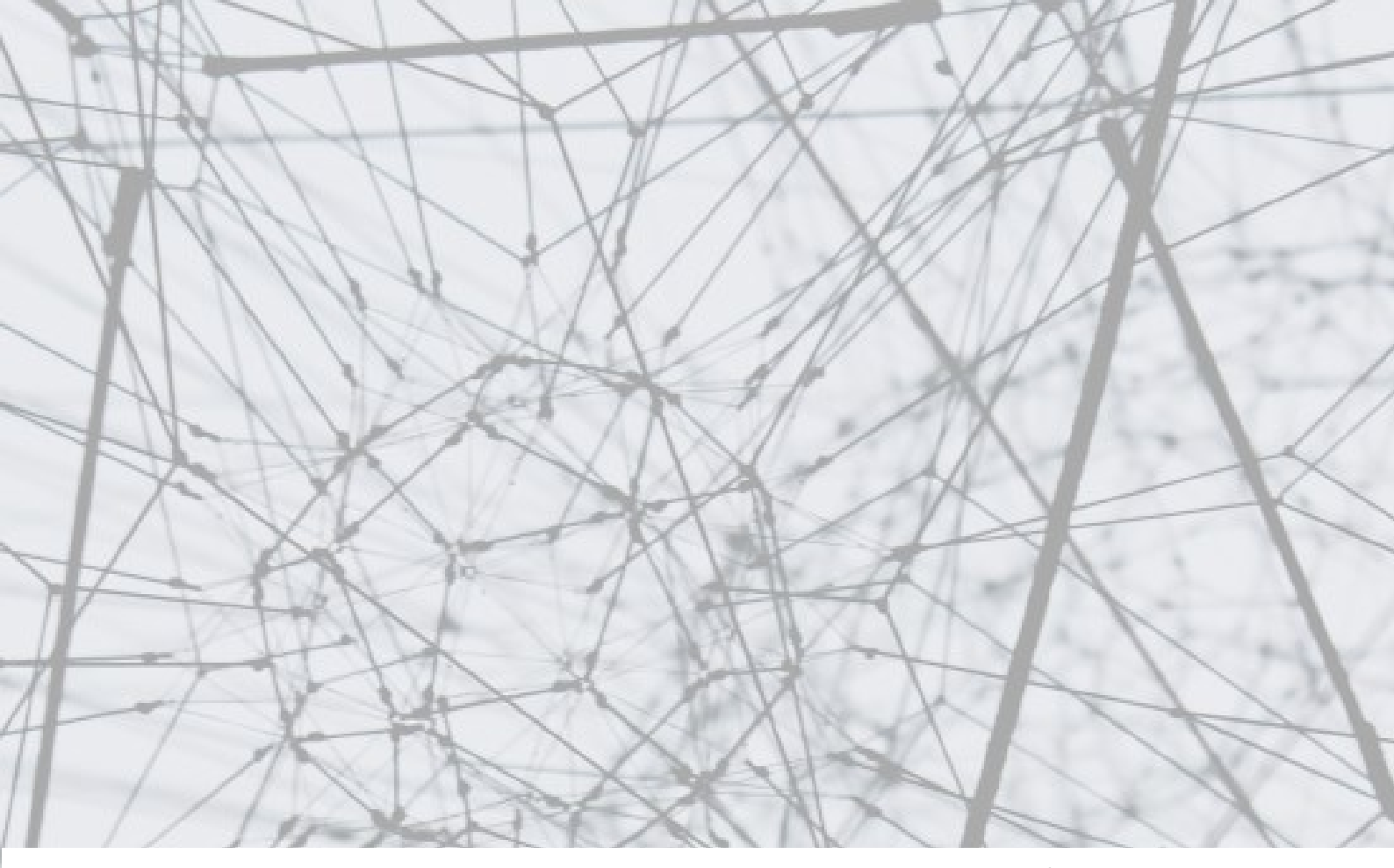

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# Behavioural Neuroscience

## Information-theoretic Measures of Mastery in Perceptual Control Theory: Insights from a Pole Balancing Task

*Nicola Catenacci Volpi*

Perceptual Control Theory (PCT) provides a comprehensive framework for understanding goal-directed behaviour achieved via the maintenance of desired perceptual states. In this presentation, I will report the results of an experiment in which we utilised information theory to investigate and characterise PCT, with a specific focus on the relationship between successful maintenance of desired states and state entropy. The experiment examines skilled behaviour in the context of balancing an inverted pole. Traditional accounts have posited that mastery entails highly routinised behaviours, emphasising well-rehearsed routes. In contrast, PCT suggests that mastery involves confining states during behaviour, allowing for significant variation in actions when necessary. By employing information theory measures, we explore the interplay between successful pole balancing and focused, well-controlled states, despite exhibiting highly variable actions. The observed trade-off between focused state control and diverse action selection emphasises the significance of achieving stable control of states, which is in fact facilitated by flexible and adaptive action selection. These findings challenge the notion that mastery is solely contingent on repetitive behaviours. During the presentation, I will discuss the experimental design, data collection procedures, and analysis techniques employed. I will show that having low state entropy correlating with successful maintenance of desired states may depend on various task-dependent factors, highlighting the need for a careful interpretation of the proposed PCT characterisation. In conclusion, the presented experimental study enhances the information-theoretic comprehension of perceptual control theory, offering valuable insights for future research and applications.

## Hierarchy, anticipatory behavior and learning in plant control vs. perceptual control

*Johannes Kasper, Christian A. Kell*

The core idea behind PCT is that the controlled entity are subjective percepts and that movements of the musculoskeletal system (the plant) are merely varied as to bring sensory signals into accordance with anticipated “desired” percepts. This stands in contrast to more engineering-inspired concepts of movement, in which the plant itself is the controlled entity and sensory signals help the controller to keep track of the current state of the plant in order to compute appropriate control signals.

In this talk I will outline some of the consequences these different underlying conceptions of the controlled entity have for proposed solutions to common control problems. I will focus on three aspects. First, I will discuss the different notions of hierarchy in control systems.

Second, I will contrast two proposals to explain anticipatory behavior: explicit predictions from internal forward models vs. implicit anticipation from delay coupling and prospective sensory cues. Anticipatory behavior – especially in highly dynamic tasks such as speech, where sensorimotor delays exceed the typical duration of fast sub-actions – poses a partially open challenge for PCT and alike theories that are built around the notion of negative feedback and in essence implement a cascade or hierarchy of homeostatic processes.

Third, I will discuss different notions of inverse models in relation to the kind of inverse model instantiated in a PCT control scheme and will discuss proposals for learning them that trade off stability against external disturbances with adaptability to true environmental changes. I will introduce the notion of learning as active control of (inter-modal) contingencies and give an outlook on how this might relate to the yet unexplained observation of non-compensating “following” responses to external disturbances.

## Seeking Regularities in a Temporal Stream of Input (or, My Search for Plug & Play Perceptions)

*Erling O. Jorgensen*

PCT is a generative model of how control happens through negative feedback processes. If something can be perceived and then affected to make it different, then it can be controlled. While PCT equations are extremely rigorous, there are few specifications for neural Perceptual Input Functions (PIFs) in the human brain. This presentation describes aspects of my Chapter 6 of The Interdisciplinary Handbook of PCT (2020), esp. 'fellow travelers' who developed the theory of Hierarchical Temporal Memory. HTM seeks to model canonical micro-circuits in the neocortex, using Time as the only teacher. A temporal stream essentially offers: What is Now, what is Near, what is Next, and what's the Timing? These properties loosely map onto Hierarchical PCT notions of Configurations, Transitions, Sequences, and Events. It appears that HTM offers plausible models for PIFs, utilizing modifications of Hidden Markov Models embedded in a hierarchical context of belief propagation. A significant expansion of the model, that is biologically plausible, is to "clone" HTM neurons when perceptual data appear in more than one sequence. This keeps the conditional probability calculations tractable, which is especially important when learning higher order sequence structure according to the HTM model.

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# Computational Modelling

## Conflict: The Good, the Bad and the Real

*Richard S. Marken*

Conflict occurs when two or more control systems, within the same individual or in different individuals, want the same variable to be in different states. Some people (sociologists, free market economists, etc.) think some conflict is good, others (therapists, snowflakes, etc.) think all conflict is bad, and still others (perceptual control theorists) think conflict is simply a real consequence of being a living control system living among other living control systems. In this talk I will show that all three views of conflict are correct. I will present examples of conflict that can be considered good (for at least one participant in the conflict) and bad (from the point of view of both the participants and an observer of the conflict). I will then use perceptual control theory to analyze conflict and show the factors that affect whether it is seen as being good or bad. One thing that will become clear from this analysis is that conflict is never good for all participants, but it can produce results that are useful from a higher-level point of view (such as scientific progress, entertainment, and self-development).

## Compliance in Perceptual Control Systems: Insights and Implications

*Roger K. Moore*

In living systems - specifically, animals - movement is typically enacted by innervating one or more muscles to pull upon tendons, bones and soft tissues. In contrast, actuation in engineered systems is customarily implemented by means of electric motors actuating hard components such as gears, levers and wheels. This means that natural systems are intrinsically 'compliant' (that is, capable of adapting to a resistive force), whereas engineered systems are inherently 'stiff' and either have to employ soft components (such as springs or elastic structures) or have compliance programmed explicitly into their control architectures. The latter is particularly interesting from the perspective of Perceptual Control Theory (PCT), as PCT is able to provide a general framework for modelling variable stiffness/compliance which may be applied to both natural and artificial systems. This talk will illuminate this principle using computer-based simulations, and it will be shown how PCT may be used to model key compliant behaviours, including the consequences for interaction between agents with matched or mismatched compliance. In particular, it will be shown how dominant/submissive agents fare in cooperative and competitive scenarios, especially in terms of the motivational effort deployed towards solving a specific task. It will also be shown how the PCT perspective on compliance may be readily extended to encompass a form of adaptation/learning, which itself may be construed as a primitive form of predictive processing or, more interestingly, recognition-by-synthesis. In other words, while compliance may be characterised as an important feature of adaptive behaviour, it may also be seen as the foundation of perception.

## PID Control in Artificial Neural Networks

*Steve Battle*

Bill Powers took "Von Neumann's other invention" – the analogue computer – as inspiration for his work. He emphasised the importance of a continuous representation over discrete representation. Looking at living control systems, 'neural current' describes the firing rate of a neuron, or a population of neurons, as a variable varying continuously over time. Most artificial neural nets use discrete time-steps, however so-called Continuous Time Recurrent Neural Networks (CTRNNs) pick up where Powers left off, modelling neural networks as differential equations (ODEs). Proportional-Integral-Derivative (PID), or three-term control is a technique from control theory, developed originally in the 1920s for steering ships. A PID controller applies a correction based on the proportional, integral and derivative terms of the error signal. Proportional control alone cannot deal with a continual disturbance, like the wind blowing a ship off course. Adding the integral of the error signal reduces this residual error. The derivative term provides additional stability by exerting a damping effect on the control output, reducing oscillation. We look at how a PID controller can be implemented using a biologically plausible CTRNN framework, developing and simulating models for p-neurons, i-neurons, and d-neuron. Unfortunately, the approach used to build d-neurons using discrete-time neural nets doesn't carry over to continuous-time – Powers comes to the rescue, as his experience with analog computers shows us how to create a differentiator with an integrator in a feedback loop. Given the utility of PID control, do we find evidence of integral or derivative elements in biology, especially in muscular control systems?

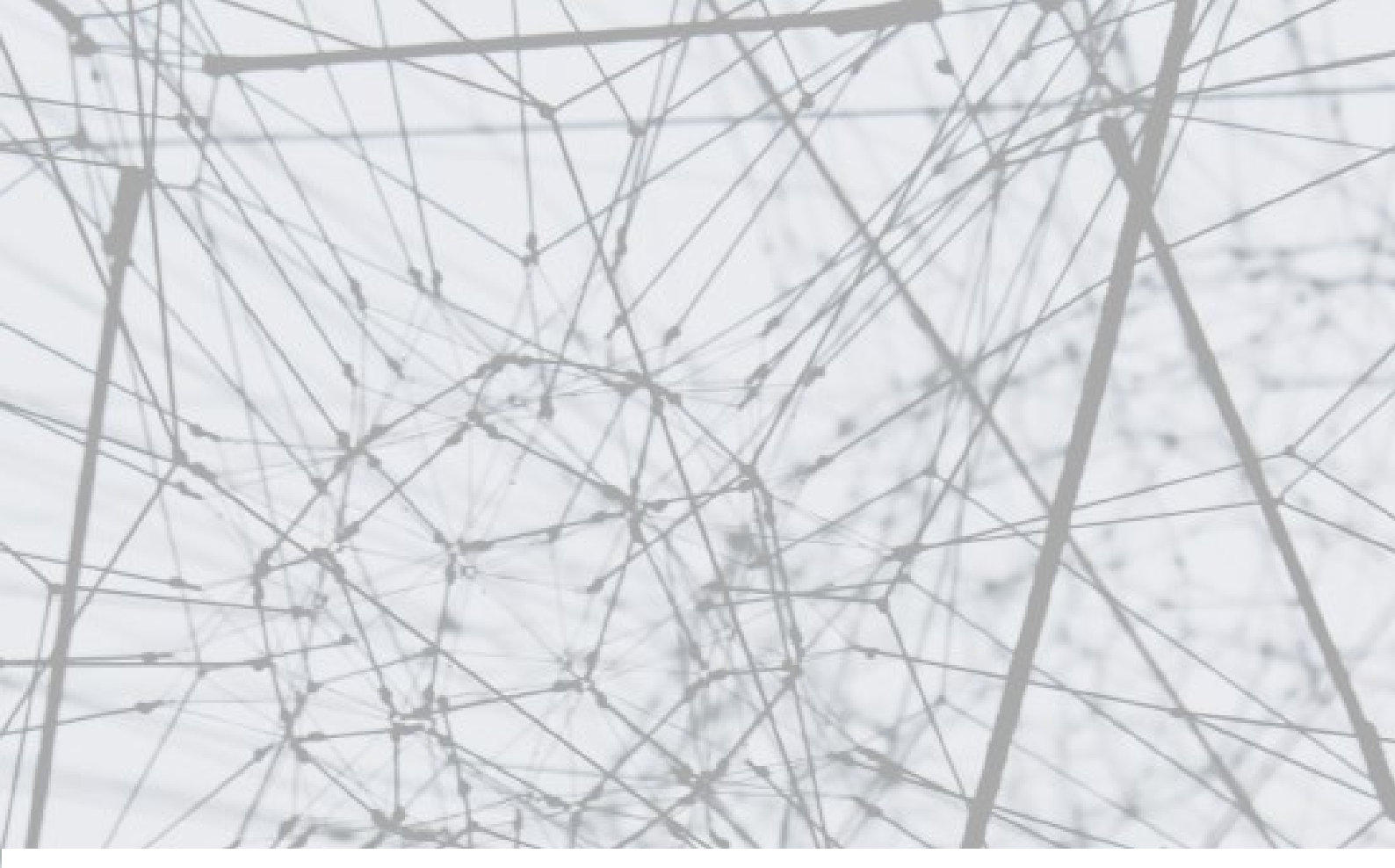
## Some Problems of Control Diagrams

*Bruce Nevin*

To model a control situation we should first be able to diagram it. Control diagrams can also help discussion of a control situation avoid getting muddled. I will propose diagrams for some control situations, such as:

- Memory and Ted Cloak's 'Nimage'
- Interpersonal conflict
- The Test
- Observing one's own behavior and 'being self-conscious'
- Social conformity
- Social differentiation and schismogenesis
- Deception

Diagrams may involve 'as though' simplifications, e.g. memory, neural current (signal), feedback function, perceived environment variable.



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# Consciousness and the Self

## Sources and dynamics of the self: PCT, Psychoanalysis, and the control of self-image

*Brian D'Agostino*

This presentation primarily discusses control of self-image at the apex of the human perceptual control hierarchy, parsed through the lens of psychoanalysis. Topics include: sources of the perceptual control hierarchy; research on machismo and militarism that illustrates control of self-image; a general theory of personality development based on "mastery through reversal of voice;" and "pure consciousness." This wide-ranging exploration shows that "the self" encompasses three strata of subjectivity: (1) what psychoanalysts call the ego; (2) the mental faculty that experiences a person's flow of thoughts; and (3) "higher states of consciousness." The first of these strata corresponds to "system level" control of self-image, the second to what William T. Powers called "the reorganization system," and the third to a style of functioning of the nervous system that is independent of both the control hierarchy and the reorganization system.

## Consciousness: The Pathway from Integrative Review to Mental Architecture to Testing a Functional Model

*Warren Mansell*

Perceptual control theory provides a functional bridge between first-person accounts of experience and third-person accounts of behaviour, through specifying how behaviour is operationalised as the control of perceptual input in a disturbance-prone world. Arguably, control of perception is a necessary, but not sufficient, building block to understand consciousness. Powers described consciousness within a living control system as occurring in a tiny subset of all the control units - where reorganisation is occurring - in order to resolve conflicts at the level below, and in doing so, reduce error within biologically prepared intrinsic systems.

It follows that if consciousness corresponds with the locus of reorganisation, and consciousness is continuous during waking hours, then intrinsic error reduction is a constant requirement. Yet, arguably intrinsic systems are often at their reference states, through internal homeostasis, and through the provision of safety, shelter, food and water within a society. Yet consciousness thrives. Therefore, I have proposed that an additional intrinsic system must be responsible for maintaining reorganisation when the other intrinsic systems are not in error. This allows curiosity-driven learning to perceive and control new perceived aspects of the self and world. This intrinsic system will experience error whenever the rate at which diverse inputs are integrated to form a novel, higher level input function (entailing a new perception) drops below a specific value. Owing to the differential signal delays from disparate inputs in the nervous system, consciousness requires 'delay lines', and a rhythmic 'refresh rate' (c. 40ms) to successfully integrate novel inputs. As with any control system, its errors can be reduced through whatever means is available - in this case through exploring new environments, manipulating objects, fidgeting, drawing, and other forms of artistic creation. Alternatively, internal generated inputs can contribute through spontaneous thoughts, mind wandering, mental imagery and even hallucination.

I will introduce some examples of tests of this PCT approach to consciousness, including tracking tasks, a computational model, and a selection of novel virtual reality environments. Ultimately it should be possible to use the Test for the Controlled Variable to examine whether each individual has intrinsic novel integration rate that uses a variety of means to counteract disturbances from the environment, i.e. too complex (overwhelming, confusing) or too simple (boring, understimulating) input. When this system controls successfully, consciousness is experienced as continuous and unbroken, forming a stable sense of self, but when it loses control, then fluctuations, distortions and breaks in consciousness would be experienced.

## Reorganisation looks different at every level in the hierarchy

*Eva de Hullu*

In this talk I would like to propose and illustrate how, although the mechanism is similar, reorganisation looks different at every level of the perceptual hierarchy. Based on my chapter on Powers' 11 levels of perceptual control (de Hullu, 2023), I will explore how the process of reorganisation (the process of random change within control systems) is experienced differently at every level of the hierarchy. This will shed light on current discussions about the process of reorganisation. I will propose the following explanation:

Level 11 (system concepts) controls through guarding the integrity of the entire system; for example a worldview or identity. Reorganisation at this level is the integration of new perceptions in your worldview and is experienced as curiosity. Level 10 (principles) controls through taking care that important clusters of perceptions (principles) in our perceptual organisation are currently met (such as intrinsic variables or personal values). Reorganisation at this level looks like gaining insight. Level 9 (programs) controls through making choices between underlying sequence perceptions in a branching structure. Reorganisation at this level is simple: a new choice, a new way to solve a problem. Imagining is the process of reorganisation at this level. Level 8 (sequences) controls through ordering perceptions in time, space or process. Reorganisation at this level is like shifting attention or being distracted into another sequence. Level 7 (categories) controls through organising perceptions into distinct categories. Reorganisation at this level looks like creative and out-of-the-box thinking: seeing something in a new way. Further down the hierarchy, reorganisation can look like making new connections at level 6 (relationships), noticing and shifting attention at level 5 (events), zooming in and out at level 4 (transitions), reconfiguration and shifting perspective at level 3 (configuration), feelings, emotions and sensations calling for attention at level 2 (sensations) and awareness at level 1 (intensities). Looking at the perceptual hierarchy this way permits us to place many aspects of our experience (attention, awareness, distraction, choices, insight, curiosity) into the functioning of the perceptual hierarchy and label these as aspects of the reorganisation process. I will also show how the overall experience of safety and unsafety/danger are essential to the operation of this system, through either allowing reorganisation to take place and prioritising change and growth or limiting reorganisation and prioritising stability and rigidity. de Hullu, E. (2023). Chapter 1. Exploring the Perceptual Control Hierarchy. In W. Mansell, E. de Hullu, V. Huddy, & T. Scholte (Eds.), The Interdisciplinary Handbook of Perceptual Control Theory Volume 2: Living in the Loop. Elsevier.

## Existence as the controlled variable

*Ty Roachford*

Ensoul is a framework dedicated to studying, and generating models of, natural control systems. To this end, Ensoul pursues the development of what might be called "cognitive capacity tests", which would be a set of tests used to understand the variable a system is controlling during a certain task, the variables a system is capable of controlling, and how one might modify the variable that a system is currently controlling. The Test for Controlled Variable (TCV) covers the first, while the second would be covered by the Test for Variable Controllability (TVC) and Test for Control Switch (TCS) respectively. The development of such tests is not a trivial matter, and to that end having a model system would facilitate the development and validation of such tests. In pursuit of this, Energy homeostatic loops, or enerstatic loops, were developed. Enerstatic loops are control systems that regulate their own causal dynamics using an "energy value" as a representation that captures the effects of those dynamics. Using this sort of computational model in conjunction with an evolutionary scheme, Ensoul hopes to create programs capable of evolving populations of natural control systems. This would provide a powerful tool for the development of cognitive capacity tests and in doing so, help further develop our approaches to studying living organisms as natural control systems.

## Cognitive-narrative dynamics of self-perspective control across the lifespan

*Joseph D. Monaco*

Against a backdrop of AI-driven success for the mind-as-machine metaphor, it is critical to advance theories and models of biological intelligence that distinguish mere information processing from the adaptive embodied control of an organism's self-perspective across its lifespan. To sharpen this distinction, I will introduce a neurodynamical framework for understanding cognitive processes as mixed-feedback cascades over heterarchical arrangements of chaotic attractors. In this framework, connected sets of attractor basins form an adaptive interface between self and nonself entropy streams that updates a multilevel distributed generative model. While structurally consistent with the constraints of radical predictive processing theories, I will present computational models of hippocampal-cortical autobiographical memory formation that instead support a perceptual control view of the narrative dynamics of the self-perspective across the lifespan. By avoiding assumptions of ergodicity in system states, perceptual control theory explains the unavoidable trade-off between the resilience of self/nonself adaptation and the accumulation of generative entropy that indexes the course of all biological life.

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# Diverse Applications of PCT

## Conditions of Learning: territory and habitat

*John Kirkland, Mike Saywell, Mike Smith, David Bimler*

Over the past few years our small research group has been unpacking the dynamics of the interface between what teachers offer and how students learn, their respective actions and interactions. Our focus is upon identifying, clarifying and comprehending both the ways conditions of learning (CoL) may be organized into a perceptual landscape, and how each teacher's niche may be described. These conditions refer to pedagogical activities shown to be important for developing students' thinking skills. The current research is twofold. First, we seek to identify the higher-level organizing themes evident from a collective map representing the perceptual landscape of CoL. Secondly. We will describe teachers' modes of engagement in that landscape of fitness. An understanding of territory (ecology) and habitat (niche) is important for promoting and developing students' higher-level cognitive capabilities in an enlightened pedagogy.

What did we do? First, we assembled 62 item-statements which, at face value, describe facets of CoL. Unadulterated items were obtained from various sources. Although most of the selected items were unashamedly cognitively biased, a few describe socio-emotional matters. Items were then edited and contoured by the authors' knowledge of PCT.

Secondly, we recruited adult volunteer participants willing to take part in a multi-level same-different card-sorting exercise. Each person followed a well-tested protocol designed by JK and David Bimler. We will describe the implicit hierarchical design of this data collection procedure. Individual data sets are aggregated as grist for our multi-dimensional scaling analysis suite. It's here the multi-dimensional space gets rendered into a 3D inter-item map, where distance is a metaphor for dissimilarity. This map is like a cat-scan of the collective perceptual territory. We will display this map and explain how we interrogate it, with the aim of revealing possible underlying and implicit themes which participants may have been applying during their decision making. The general aim is to reduce uncertainty (aka entropy) of structural coherence.

Then, for addressing our second objective, the mapped mental territory is available as a starting point for describing unique lived-in pedagogical habitats. This goal is achieved by applying a dedicated procedure appropriated from Q-sort methodology, which is a systematic approach for describing individual's subjective views of a particular topic. We will demonstrate our variation of this technique for online data collection.

Finally, we illustrate the utility of having a perceptual map for delivering subjective point-of-view niche habitats for advancing layers of enlightened pedagogy's closed loop systems.

## Reflexive Conflict Management

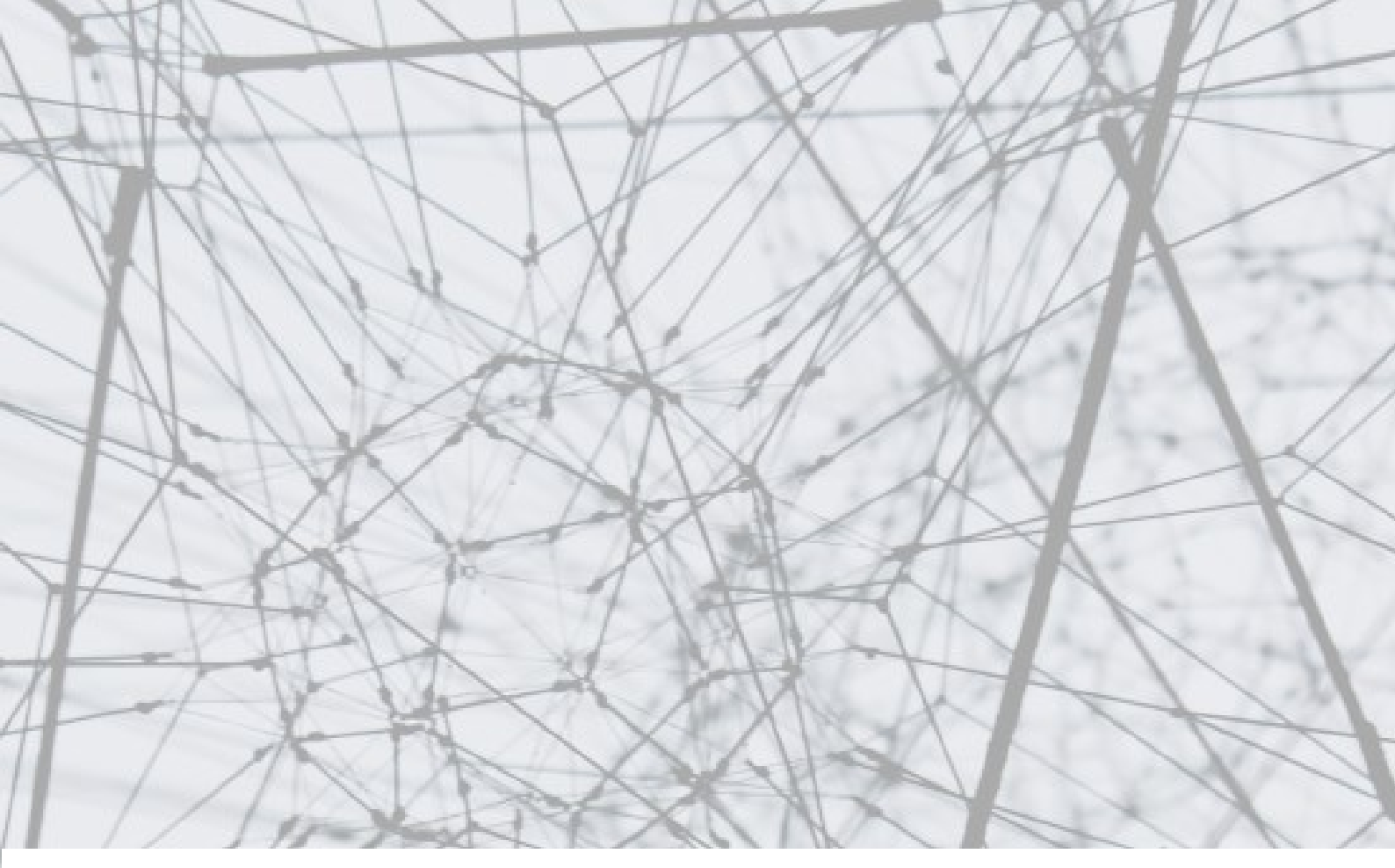
*Tom Scholte*

This workshop will introduce participants to a new heuristic tool for conflict engagement that draws upon and synthesizes work in PCT by Shelley Roy, Ed Ford, and Dag Forsell along with concepts from second-order cybernetics. Application of the tool will be demonstrated through role-play in which attendees will be invited to participate.

## Harnessing the Power of PCT: A Personal Journey from Lateness to Punctuality

*Trinley Goldberg*

In this talk, we'll look at a practical application of Perceptual Control Theory (PCT), starting with the example of the presenter's personal journey to overcome lateness. The focus will be on understanding our brains' error signals, how they manifest at different levels, and how they can be used to change their habits. Attendees will gain insight into the application of PCT and have the opportunity to experiment with using the method for their own issues.



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# Global PCT

## PCT in Japan

*Masaru Kanesuki*

PCT is still not well known in Japan. Translated books in Japanese on PCT have yet to be published. A search of the Japanese literature search Cinii, in Japanese and with PCT, yielded only 12 hits, of which 11 were studies by myself and my colleagues. As a clinical psychologist, I have conducted research on PCT and have also taught PCT at my university in Japan. In research, quantitative studies of the PCT approach to emotions such as anger and anxiety have been conducted (Kanetsuki & Kanetsuki, 2012; 2016). The impact of conflict on negative emotions was examined with reference to the study by Mansell's research team (e.g., Kelly et al., 2011). Theoretical considerations have also been made on how PCT can be used in the field of clinical psychology. For example, Beck's schema in cognitive therapy was reinterpreted in terms of PCT (Kanetsuki, 2018). And I attempted to discuss Carl Rogers's concept of actualizing tendency from the perspective of PCT (Kanetsuki, 2017). In education, I also give lectures on PCT to undergraduate and postgraduate students who want to become psychologists. For example, I introduce the usefulness of TCVs in educational settings (Carey, 2012). This presentation will present the Japanese recipients' impressions of my previous research and lecture on PCT (e.g., "PCT is difficult") and consider the factors hindering the promotion of PCT. I will also present my planned future research on PCT. It would be great to receive input from IAPCT members on how PCT can be promoted in Japan in the future.

## Helping spread PCT in South America

*Hugo Cristo Sant'Anna*

This short talk reports in-person and online actions taken in Brazil and Argentina to spread Perceptual Control Theory (PCT) and Method of Levels (MoL) to South American (SA) audiences, since the 32nd IAPCT Conference. The necessity for these actions were identified after discovering the lack of publications in Portuguese citing PCT or MoL at any major SA bibliographic databases, such as Scielo, Latindex, and BVS. The most important thesis and dissertations archive, managed by the Coordination for the Improvement of Higher Education Personnel (Capes) of the Brazilian Government, doesn't include any records of graduate research in PCT or MoL. Except for a Portuguese edition of Frans Plooij's and Hetty Van De Rijt's "The Wonder Weeks" (translated as "As semanas mágicas"), there aren't books available for Brazilian readers. Despite its availability, that title is targeted at parents, not researchers or therapists, and can be found only in online bookstores. Considering other professional and academic fields in Brazil, PCT seems completely unknown. Nonetheless, there are important introductory papers for Spanish readers published by Matias Salgado in Argentina, as well as his efforts to organize local study groups, livestreams, and both in-person and online classes. Aiming at reorganize this scenario, three groups of actions were started by the present author since October 2022: 1) online and in-person lectures for graduate programs in Argentina (Design PhD Program at Universidad de Palermo) and Brazil (Psychology Masters and PhD Program at Federal University of Espírito Santo); 2) a short in-person PCT/MoL presentation at the biggest Cognitive-Behavioral Therapy congress in Brazil – XV CBTC, with Matias Salgado; 3) a website called "PCT Latam", in collaboration with Matias Salgado, which will offer introductions, videos, and other PCT/MoL resources in Portuguese and Spanish. There are many challenges to be faced while spreading PCT for Brazilian audiences, considering the fragmented landscape of the major research areas in Psychology and Health Sciences. Feedback and contributions from the PCT community will be essential to improve the ongoing efforts.

## Building Bridges: MOL and PCT in Spanish

*Matias Salgado*

With the increasing interest among Spanish-speaking professionals in the Method of Levels (MOL) and Perceptual Control Theory (PCT), there is a noticeable lack of available learning resources in Spanish. To address this gap an online introductory MOL training program is being developed. This web-based training consists on various components: (1) Learning materials such as videos and selected readings, (2) A forum where clinicians can actively participate by replying to exercises and asking or answering questions. Additionally, live MOL training sessions will be conducted, allowing participants to receive feedback from trainers and interact with their colleagues in real-time. The online format offers several advantages, including accessibility, as participants can access the training materials without any time constraints, location limitations, or participant capacity restrictions. Moreover, this format is more cost-effective compared to in-person trainings. However, there are also potential downsides to consider. Participants may passively observe the training materials without actively engaging, and the quality control over the learning process may be somewhat reduced. Additionally, a significant amount of learning material still needs to be available in English. Overall, clinicians who wish to develop introductory proficiency in delivering MOL therapy could greatly benefit from this approach. By actively practicing MOL, engaging in discussions with colleagues, and having access to foundational reference materials throughout their learning journey, participants can enhance their competence in understanding and applying MOL. Furthermore, this web-based forum provides an opportunity to foster the growth of an MOL and PCT Spanish-speaking network.

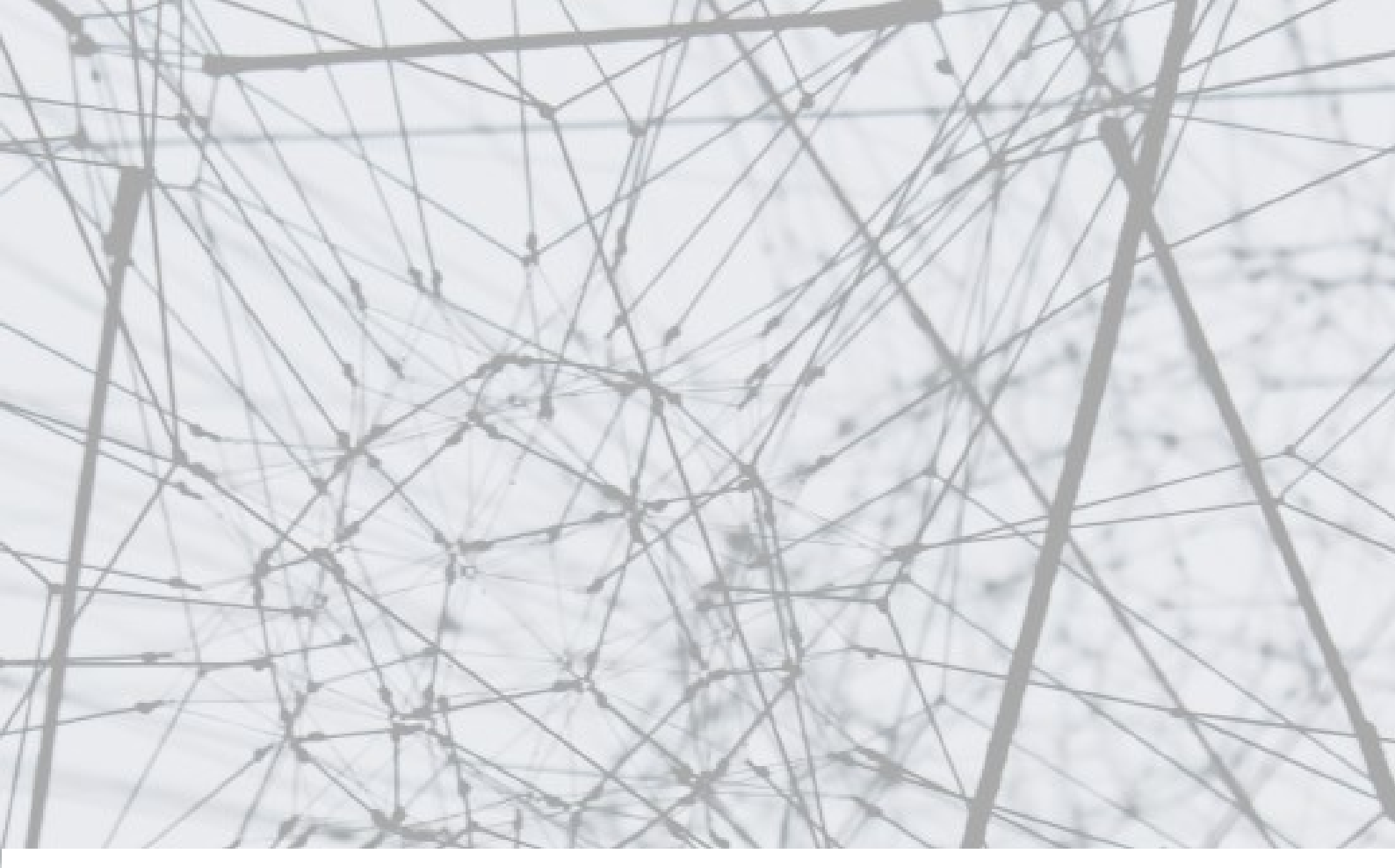
## PCT in Pakistan

*Maryam Riaz, Mueen Abid*

Perceptual Control Theory (PCT) as an integrative framework to manage the mental health issues of societies has not been introduced in Pakistan Yet. Despite of the enlightening evidences regarding the usefulness of PCT, it is still an overlooked and under studied area in Lower Middle Income Countries (LMICs) particularly in Pakistan. A literature search on OVID interface indicated that there is not a single research publication available to reflect PCT's use in clinical or educational settings in Pakistan.

Our journey toward PCT was started during our PhD. research fellowship at the University of Manchester, UK, where we got a chance to learn the initial concepts of PCT interventions and about its applications in the reduction of symptoms across the taxonomy of mental health disorders. Regardless of the long history and huge impact of PCT, we are very young pupils as we are currently learning different trans-diagnostic techniques to provide mental health services to unprivileged communities in order to address the severe mental health gaps in Pakistan.

To invite the attention of mental health professionals and researchers about the application of PCT interventions in Pakistan, currently we are delivering introductory lectures about the nature and scope of PCT Interventions (Method of Levels, 4Ds, Take Control Course) in mental health departments of different universities and health care centers across Pakistan. To apply these PCT interventions in Pakistan we are planning forcultural adaptation of the content of PCT according to the norms of Pakistani culture. Further, to explore the initial feasibility of culturally adapted trans-diagnostic intervention we are planning to conduct an exploratory RCT of the PCT intervention (Take Control Course) in adolescents with common mental health conditions as Pakistan is a great hub of young people with 60% of its total population and every 3rd individual is experiencing any mental health problem. We hope that IAPCT conference will help us to get more pragmatical ideas about the future implementation of PCT in Pakistan to serve the humanity as a whole.



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# Mental Health

## Developing and evaluating training for family care partners to enhance communication and relationships between carers and people living with dementia

*Lydia Morris and Cassie Eastham*

Communication and interaction are fundamental needs. Carers of people living with dementia, and those they are caring for, can experience significant communication challenges. Key interaction challenges include the varied and person-specific perceptual, memory, communication and personality changes that can result from dementia. The progression of dementia may also result in changes to the roles and dynamics of relationships which present a further challenge to communication. Communication and empathy are based on understanding the goals of others involved. Identifying another person's goals and addressing any goal conflicts is made more difficult when the other person has difficulties expressing their perspective verbally, or their internal experiences change. However, there remains a lack of relevant training and interventions that can support family care partners and people living with dementia to address this.

This presentation describes initial findings regarding an innovative communication training course for carers. The Empowered Conversations course is based on these principles and encourages carers to 'pause-reflect-reconnect'. The course uses interactive exercises and teaches strategies for carers to consider the goals and emotional experiences of those they are caring for, as well as considering their own goals and experiences. The online format of the course is currently being evaluated and the findings of 15 in-depth interviews with family care partners will be presented. Interviews will be analysed using thematic analysis. Initial analysis has highlighted the many benefits carers have identified since accessing the course.

## Method of Levels (MOL) to explore the lived experiences of veterans in construction

*Susan McCormack*

Background: As veterans depart from military service, they often find themselves exploring alternative industries, with the construction sector identified as a prominent choice. However, the construction industry's cultural norms place a strong emphasis on masculinity and a rugged image, which unfortunately correlates with alarming suicide rates among male construction workers in UK. The alarming statistics highlight the urgency of understanding the factors influencing help-seeking behaviour and implementing effective interventions to support these vulnerable veterans. In this regard, Perceptual Control theory (PCT), and Method of Levels (MOL) therapy, could prove effective in addressing veterans' psychological distress. MOL therapy postulates that trauma arises from unresolved conflicts and a perceived lack of control.

Objective: The objective of this study is to explore the experiences of British Army veterans in the construction industry and their attitudes towards seeking help and support following their transition out of the military. Additionally, the study aims to conduct a case-series analysis to investigate the effectiveness of Method of Levels (MOL) therapy as an intervention in addressing the psychological distress experienced by these veterans.

Methodology: The methodology employed for this study is a case-series design involving 12 participants who will undergo MOL therapy as the intervention. The therapy sessions will be tailored to meet the specific needs and preferences of the participants, empowering the veterans to have control over the content and duration of each session. To facilitate scheduling and accessibility, a self-booking system will be implemented, aiming to enable an average of 8-10 therapy sessions per participant. Throughout the therapy sessions, the focus will be on exploring the participants' experiences the impact of the treatment, for veterans in the construction industry. The outcomes of MOL therapy will be measured at various time points, including baseline, therapy completion, and follow-up assessments.

Conclusion: This study aims to shed light on the experiences of British Army veterans in the construction industry and their attitudes towards seeking help after their military service. By evaluating the effectiveness of MOL therapy as an intervention, this research will contribute to the understanding of effective strategies for supporting veterans' psychological well-being during their transition into the construction industry.

## It's not eclectic – its 'Transdiagnostic'

*Susan McCormack*

It's not eclectic – its 'Transdiagnostic' Mode Rehabilitation is an evidence-based psychological therapy service that aims to help individuals identify and address the underlying causes of psychological distress. A wide range of clients from the Armed Forces Community, capital prisoners, students and young people, and homicide victims, are treated with the Method of Levels (MOL) approach. This presentation will provide an update on the effectiveness of MOL in reducing psychological distress and helping clients to focus on their underlying beliefs and values. Through case examples and therapeutic encounters, the efficacy of the approach will be demonstrated regardless of the problem. Limitations of advice-giving or suggestions to reduce symptoms, and the need for a randomised control trial to provide more conclusive evidence, will also be discussed. This will help to support the use of MOL as an effective transdiagnostic CBT approach that can be certified and accredited in the field.

## MYLO: An artificial, text-based emulation of Method of Levels - Latest Developments

*Aimee Wrightson-Hester*

Manage Your Life Online (MYLO) is an AI-based conversational agent (or 'chatbot') that has been designed to emulate a Method of Levels (MOL) therapist. Users can freely type about a problem they are experiencing, and MYLO aims to aid participants in solving their problem by responding with questions. These questions adhere to the principles of MOL and aim to increase users' awareness and exploration of problems they are experiencing. In 2022, the original MYLO web application was transformed into an application co-designed with a youth advisory panel to appeal specifically to young people and work on a range of smartphone devices. The new application was found to be feasible and acceptable to young people during a 2-week case-series. However, various recommendations were made to improve MYLO's ability to support people's mental health. Therefore, the research team undertook a review of MYLO's database to improve MYLO's ability to identify relevant terms in the user's text, and the range and quality of questions MYLO asks in response to these terms. To achieve this, we consulted various experts and resources: we recruited another youth advisory committee to provide feedback and suggestions for improvements, we consulted with MOL practitioners that specialised in treating children and young people to gain insight into adaptations made for this population, and we reviewed MYLO conversation transcripts and MOL recordings to identify new questions and terms. The insights gained through this process will be implemented between May and July 2023. The improved MYLO will then be tested in a short case-series to test the feasibility and acceptability of the new database. The outcomes of this case-series will be compared to the previous case-series to see if MYLO's helpfulness and ability to reduce problem related distress and other mental health symptoms has improved.

## Reorganisation of Conflict scale: Measuring the mechanism of psychological change

*Lydia Morris, Isabeau Tindall, and Warren Mansell*

Perceptual Control Theory (PCT) suggests that psychological distress arises from conflict. The in-built learning process of reorganisation resolves these conflicts by maintaining awareness on the higher-level goal driving the conflict within lower-level systems. A number of years ago, we developed a scale, known as the Reorganisation of Conflict scale (RoC) to help people report on their tendencies to become aware of conflict (e.g., through questions such as, 'When I have a problem it feels like there are two sides of me wanting different things'), the conditions facilitating its reorganisation (e.g., via questions such as, 'I feel that it helps to just take a step back and look at your problems from a different perspective'), and the processes that might interfere with this (e.g., through questions such as, 'It is not acceptable to delay making a decision to another time'). The scale was based on PCT and interviews with people who reported recovery from diverse mental health problems (Higginson and Mansell, 2008). Whilst no specific style of dealing with conflict is likely to be the same for every problem, this scale would provide the chance to compare a scale derived from PCT with those derived through other theories (e.g., experiential avoidance; intolerance of uncertainty, decentering, attentional control, cognitive flexibility). In Study 1, we recruited a large non-clinical sample (n = 294), and in Study 2, a primary care mental health sample (n = 156). In Study 1, an Exploratory Factor Analysis was conducted, with the two-factor solution found to be the best fit of the sample data. These factors were: 1) Inflexible, conflicted, and arbitrary responding, and 2) Components of goal conflict reorganisation. Both factors also sufficiently correlated with depression, anxiety, stress, poor functioning, and measures of inflexibility. In Study 2, the two-factor structure was confirmed through Confirmatory Factor Analysis, with the RoC also indicating acceptable internal reliability, and sufficient correlations with the same measures used in Study 1. The RoC, however, did not predict anxiety and depression symptoms at 6-month follow-up when controlling for symptoms at baseline. Future research should examine whether the RoC is able to predict the underlying 'core mechanism' suggested to be responsible for psychological distress. We plan to explore this through 1) extracting a factor score, representing the common variance across diverse measures of psychological distress, and 2) examining the relationship between this factor and the RoC. Preliminary evidence suggests that the Inflexible, conflicted, and arbitrary responding subscale of the RoC subscale, especially, is strongly related to this factor score.