ISSN: 3035-062X
2024, 1(2)
Preliminary Reports and Negative Results in Life Science and Humanities

Supersizing Cognition in CBT Through Dual-Process Theories and 4E Cognition

Umberto Crisanti

BABCP; Universal Scientific Education and Research Network (USERN); Psychotherapist in Private Practice, Kent, Canterbury, England. umbertocrisanti@gmail.com

Citation: Crisanti, U. (2024). Supersizing Cognition in CBT Through Dual-Process Theories and 4E Cognition. Preliminary Reports and Negative Results in Life Science and Humanities
https://doi.org/10.13129/3035-062X/prnr-4626

Abstract

Objective: The integration of Dual-Process Theory and the 4E Cognition framework within Cognitive Behavioural Therapy (CBT) offers a novel and comprehensive approach to addressing the complexity of cognitive processes underlying psychological disorders. This study aims to explore how these theoretical perspectives can be synthesised to enhance the effectiveness of CBT by addressing both automatic (System 1) and deliberate (System 2) cognitive processes, alongside the embodied, embedded, extended, and enactive dimensions of human cognition.

Method: A conceptual analysis was conducted, drawing on established literature related to Dual-Process Theory, 4E Cognition, and CBT. This analysis informed the development of an integrated CBT model that incorporates these cognitive principles. The model was then applied to clinical case examples and theoretical scenarios to illustrate its practical implications for therapeutic practice.

Results: The analysis demonstrated that traditional CBT approaches often prioritise conscious, reflective processes (System 2) while underemphasising the role of automatic, intuitive processes (System 1). Integrating 4E Cognition principles into CBT provided a more robust framework for understanding how cognition is shaped by the body, environment, and interactions. This holistic approach enabled a deeper examination of client behaviours and emotional responses, suggesting that incorporating these principles could improve treatment outcomes, particularly in cases involving complex psychological conditions.

Conclusions: Integrating Dual-Process Theory and 4E Cognition into CBT presents a promising pathway for advancing therapeutic interventions. By addressing both unconscious and conscious cognitive processes within an embodied and contextually grounded framework, this model has the potential to offer more nuanced and effective treatment strategies for psychological disorders. Further empirical research is needed to validate the clinical application of this integrative model.

Keywords: CBT; Cognition; Dual-Process Theory; 4E Cognition; Emotion.

Introduction

Cognitive Behavioural Therapy (CBT) highlights the fundamental importance of our thoughts in understanding and treating psychological difficulties. David A. Clark, in his 1995 paper, carefully outlines the principles that make cognitive behavioural therapy distinct from other therapeutic practices. He describes the collaborative partnership between therapist and client as they work together to uncover and address distorted cognitions that stem from deeply held beliefs or assumptions. Through a process of logical analysis and testing hypotheses in real-life scenarios, clients are supported in adjusting their thinking to better reflect reality (Clark, 1995). Echoing these insights, other influential cognitive therapists, such as Aaron T. Beck, have emphasised that altering dysfunctional thoughts is central to effective psychological treatment. They propose that therapeutic strategies, whether explicitly or indirectly, aim to reshape unhelpful cognitions (Beck, 1970;

ISSN: 3035-062X
2024, 1(2)
Preliminary Reports and Negative Results in Life Science and Humanities

DeRubeis et al., 2001). This concept is woven into CBT manuals, which offer detailed guidance on methods to reframe the importance of thoughts (Beck et al., 1979; Beck, 1995).

Similarly, Hackmann (1997) outlines practical techniques for exploring and challenging unhelpful thoughts by examining their internal coherence—evaluating the evidence for and against them, fostering more balanced perspectives, and recognising signs of cognitive distortions. Although this structured, rationalist approach has proven highly effective, it has also faced theoretical critique. Some researchers advocating for more comprehensive cognitive models argue for a richer understanding of human thought processes. Brewin, in his M.B. Shapiro Award Lecture (Lawson, 2005), questions the premise that tackling thoughts directly always leads to changes in feelings and behaviour. He suggests that human cognition includes multiple layers of memory systems and knowledge bases, many of which remain out of reach for introspection. Brewin calls for a constructivist approach, focusing on reinforcing more adaptive self-concepts rather than merely debating problematic thoughts.

Teasdale (1997) adds to this conversation by distinguishing between propositional meanings—logical, factual interpretations—and implicational meanings—those that capture the holistic, emotional essence of experiences. He contends that implicational beliefs are not readily evaluated for accuracy in the traditional sense, and therapy should aim to transform the client's felt experience rather than only engaging with beliefs at a logical level. For Teasdale, simply challenging distorted thoughts overlooks the chance to connect with the deeper, emotional dimensions of a client's experience.

The ongoing dialogue within the field of CBT reflects its dynamic and evolving nature. Despite CBT's emphasis on the power of cognition, this paper posits that CBT may unintentionally neglect the more profound cognitive processes and frameworks that shape thought and behaviour. The primary critique of CBT is that it often focuses on observable thought patterns and behaviour while not fully addressing the underlying beliefs and cognitive structures that drive them.

In this paper, I will delve into these core, deeper cognitive elements by integrating the Dual-Process Theory and the 4E Cognition framework (embodied, embedded, extended, enactive).

What is cognition?

One of the earliest definitions of cognition was articulated by psychologist Neisser in 1967. Neisser (2014) described cognition as "those processes by which sensory input is transformed, reduced, elaborated, stored, recovered, and used." This conceptualisation captures the essence of CBT's message: our thoughts and actions significantly influence our emotions.

Neisser's assertion that cognition is a multifaceted and dynamic process, involving both conscious deliberation and subconscious mechanisms, aligns with modern understandings that cognitive processes are not singular in their operation. Aaron T. Beck, widely regarded as the father of CBT, expanded on this concept, delineating consciousness into preconscious, conscious, and metacognitive domains (Alford & Beck, 1997). Beck posited that 'cognitive therapy aims to bring to consciousness certain processes that are initially unconscious.' This emphasis on uncovering hidden cognitive processes reflects a foundational goal of CBT.

ISSN: 3035-062X
2024, 1(2)
Preliminary Reports and Negative Results in Life Science and Humanities

This perspective is consistent with Daniel Kahneman's System 1 and System 2 framework (Kahneman, 2011). System 1 often operates at a preconscious level, automatically generating thoughts and feelings influenced by past experiences and associations. In contrast, System 2 involves more deliberate, controlled thought, which is traditionally engaged in CBT to help individuals 'change their thoughts'. However, this approach brings with it certain limitations. While CBT's structured techniques often target System 2 processes, they may overlook the automatic, unconscious operations of System 1, where deeper, more ingrained beliefs and biases reside.

Adding depth to the understanding of cognition, Ludwig Wittgenstein (Wittgenstein et al., 1967) suggested that cognitive processes are woven into various manifestations of life and are not confined to a singular dimension. His proposition supports the idea that cognition—and by extension, psychological interventions—should encompass the full range of human experience. This perspective underscores the importance of acknowledging that cognitive processes are varied and widely distributed across different aspects of human life.

Dual-Process Theory

Dual-Process Theory (Kahneman, 2011) illuminates the dual nature of cognition: System 1, characterised by its quick, automatic, and emotion-driven responses, and System 2, noted for its slower, more analytical, and conscious processes. While traditional CBT is effective in engaging System 2 to challenge and reframe maladaptive thoughts, it faces limitations in addressing the deeper, automatic operations of System 1. These automatic processes can hold entrenched beliefs and biases that are less accessible through logical and conscious methods alone. Integrating this understanding calls for a more comprehensive approach that recognises the spectrum of cognitive activity, aligning with Wittgenstein's broader view of human cognition as interwoven with diverse experiences and life expressions.

4E Cognition

The 4E Cognition framework (Varela et al., 1991; Clack and Chalmers, 1998) suggests that cognitive processes are not solely confined to the brain but are embodied, embedded within context, extended beyond the individual, and enactive, meaning that they arise through interaction with the world.

Embodied cognition posits that the mind is not solely a product of brain function; rather, it is profoundly shaped by the physical body's interactions with the surrounding environment. Perceptions, movements, and bodily sensations are integral to cognitive experiences, demonstrating that cognition is inherently linked to the body.

Embedded cognition suggests that cognitive processes are deeply situated within the environmental and contextual settings in which they occur. Unlike the notion of cognition as an isolated brain activity, embedded cognition highlights how our thoughts and behaviours are inseparable from the context in which they arise, influenced by the external world and its constraints.

ISSN: 3035-062X
2024, 1(2)
Preliminary Reports and Negative Results in Life Science and Humanities

Extended cognition asserts that cognitive processes, such as memory, decision-making, and problem-solving, extend beyond the brain to include external aids and resources. This includes tools, technological devices, and interactions with others. The brain works in tandem with these external elements, meaning that cognition is not confined within the individual mind but is distributed across a network of internal and external components.

Enactive cognition emphasises that cognition is a dynamic and interactive process, constructed through an individual's continuous engagement with their environment. This perspective focuses on how cognition arises from active participation, involving bodily movements, sensorimotor feedback, and social interactions, rather than being a passive process of receiving and processing information.

The principles of 4E cognition collectively argue for a more nuanced understanding of human experience that goes beyond the simplistic notion of ‘changing your thoughts’ as seen in traditional CBT. The complexity of human cognition, shaped by this comprehensive framework, suggests that such an approach could be considered limited, given the intricate influences that shape how we think and process experiences.

In a therapeutic context, the application of 4E cognition can be illustrated through various stages of client engagement. The initial interaction between client and therapist exemplifies embedded cognition. The structure of the healthcare system influences this interaction, encompassing aspects such as appointment scheduling, access to healthcare facilities, form-filling procedures, and payment for services. Additionally, cultural and social contexts shape both the client's and therapist's understanding of mental health, perceptions of therapy, and relational expectations.

The client’s participation in therapy is not limited to processing information about the therapist's appearance or the therapy setting; it also involves embodied interaction. The client uses their body to communicate emotions, thoughts, and experiences, expressing themselves through tone, gestures, and physical presence. This embodiment enriches the therapeutic process, making it more than a cognitive exercise.

Moreover, clients may extend their cognitive processes by drawing on social and cultural knowledge, incorporating shared experiences, and utilising language and metaphors that resonate with their background to deepen communication and rapport with the therapist.

The therapeutic journey itself is enactive, embedded within a wider social and cultural context that lends it meaning far beyond the immediate physical and cognitive dimensions. Through this process, a client develops greater awareness of their internal world, relationships, and difficulties, integrating embodied, embedded, and extended elements into their personal growth. They learn to identify and articulate their emotions, bodily sensations, and behavioural responses.

Reflection on their experiences is informed by personal history, cultural background, and social influences, suggesting that cognition is not solely rooted in the brain but embodied in actions and framed by interactions within a cultural context. Embodied cognition stresses the significant role of the body in mental processes, embedded cognition points to the situational nature of thought, extended cognition highlights how cognitive processes intertwine with the external world, and enactive cognition underscores the impact of active engagement and perception on cognition

ISSN: 3035-062X
2024, 1(2)
Preliminary Reports and Negative Results in Life Science and Humanities

While these principles could significantly enhance therapeutic practices, they remain largely outside the traditional focus of CBT due to several factors:

ISSN: 3035-062X
2024, 1(2)
Preliminary Reports and Negative Results in Life Science and Humanities

Theoretical and Historical Orientation:

CBT's foundations in cognitive and behavioural theories have traditionally centred on identifying and modifying internal thought processes and observable behaviours. The models shaping CBT were developed with an emphasis on practical interventions that target specific and tangible cognitive patterns. As a result, they often do not incorporate a more holistic view of cognition as situated within and influenced by the body, environment, and social interactions. Integrating the insights from Dual-Process Theory and the 4E Cognition framework could help bridge this gap by broadening the understanding of how individuals think, feel, and act within their lived experiences.

Evidence-Based Methodological Focus:

The strong evidence base for CBT's effectiveness is built upon research that has predominantly focused on interventions addressing conscious, deliberative thought processes. While this has contributed to CBT's widespread success and validation, it has also meant that less attention has been given to the more automatic, embodied, and contextually embedded aspects of cognition. Although there is growing interest in approaches that extend beyond traditional cognitive frameworks, the empirical support for CBT has yet to fully incorporate or reflect the comprehensive nature of these broader cognitive theories.

In summary, this paper seeks to explore two key questions:

How does the 4E Cognition framework complement and expand the application of Dual-Process Theory in therapeutic contexts? This question probes how the 4E framework enhances the understanding of cognition in therapy by recognising that thought and behaviour are not confined to internal processes but are part of a larger, interactive system.

What are the implications of recognising the complexity of mental processes in therapy through Dual-Process Theory? This question investigates how acknowledging the dynamic interplay between automatic and deliberative cognitive processes can improve the effectiveness of CBT in addressing psychological conditions. By expanding CBT's scope to integrate these insights, therapeutic practices can become more attuned to the realities of human cognition and more adaptable to each client's unique context.

Homeostasis and Autopoiesis: 4E Cognition and Dual Process Perspectives in CBT

Walter B. Cannon's seminal definition of homeostasis as the body's ability to maintain steady states through physiological regulation (Cannon, 1932), along with Linda S. Costanzo's dynamic characterisation of homeostasis as an intelligent, self-regulating process (Costanzo, 2018), underscores the importance of stability and balance in biological systems. This balance extends beyond the purely physiological, encompassing psychological dimensions where emotions and behaviours are similarly regulated to maintain equilibrium. Cannon's insights into the psychological aspects of homeostasis align with contemporary therapeutic approaches that emphasise the mind-body connection as vital for mental health.

ISSN: 3035-062X
2024, 1(2)
Preliminary Reports and Negative Results in Life Science and Humanities

The concept of autopoiesis, introduced by Francisco Varela and Humberto Maturana (Maturana & Varela, 1973; Varela, Maturana, & Uribe, 1974), highlights the self-organising, self-sustaining nature of living systems. This principle aligns closely with homeostasis, emphasising the organism's inherent capacity for self-maintenance and adaptation. In psychotherapy, autopoiesis underpins the enactive approach, which recognises individuals as active participants in shaping their environments. This perspective challenges the more traditional, passive views of cognition and proposes that cognitive processes are embodied, situated, and inherently tied to our interactions with our surroundings.

Integrating Dual-Process Theory into this discussion, it becomes evident that System 1 and System 2 cognitive processes play distinct roles in maintaining homeostasis and supporting autopoietic functioning. System 1, with its rapid, automatic operations, is essential for managing routine physiological and psychological responses that promote balance. These responses often present as automatic emotional reactions or habitual behaviours—adaptive or maladaptive, depending on the context. On the other hand, System 2 engages in deliberate, analytical thinking that enables conscious behavioural adjustments in response to internal states or external changes, supporting a dynamic equilibrium.

CBT traditionally urges therapists to look beyond observable behaviours and consider the underlying cognitive mechanisms, including those that operate at preconscious levels. By incorporating Dual-Process Theory, therapists can acknowledge that behaviours often serve regulatory functions aimed at maintaining psychological balance. System 1 may drive unconscious safety behaviours, while System 2 facilitates conscious modification of these behaviours for more adaptive outcomes. The therapeutic process involves helping clients become aware of these automatic (System 1) responses and guiding them to approach these patterns flexibly and adaptively, supported by the reflective capacity of System 2. This approach necessitates a therapist’s active role in creating a safe and supportive environment where clients can explore and modify deeply ingrained behavioural patterns, particularly those associated with painful emotions or memories.

Moreover, the integration of body-oriented interventions such as Compassion Focused Therapy (CFT) and mindfulness practices into CBT represents an evolution that resonates with the principles of 4E Cognition. These interventions demonstrate that the physical state significantly impacts mental processes, supporting the idea that cognition is inherently embodied. Techniques that stimulate the vagus nerve (Porges, 2007) through controlled breathing or incorporate practices like yoga and mindfulness (Van der Kolk, 2014) illustrate the importance of the body in emotional and cognitive regulation. These practices bridge the gap between body and behaviour, influencing both physiological responses and cognitive outcomes by aligning System 1 and System 2 processes to achieve homeostasis.

The 5th E: Integrating Emotion into 4E Cognition and Dual-Process Theory in CBT

A common misconception about CBT is that it simplifies the understanding and transformation of emotions, sometimes being viewed as less nuanced than other forms of talk therapy. However, this perception overlooks the extensive methods developed within CBT over the past 50 years, spanning from foundational Cognitive Therapy to more integrative approaches such as Schema Therapy,

ISSN: 3035-062X
2024, 1(2)
Preliminary Reports and Negative Results in Life Science and Humanities

Mindfulness-Based Cognitive Therapy, and Acceptance and Commitment Therapy. These approaches illustrate CBT's adaptability and comprehensive engagement with emotional processes. To counter the notion that CBT merely simplifies emotions, it is beneficial to reference Baker's (2007) model of emotional processing, which elucidates the mechanisms through which emotions are regulated—mechanisms such as avoidance, dissociation, suppression, and uncontrolled expression.

Baker's Model of Emotional Processing

Baker's (2007) model provides a structured way to understand how emotions are processed and regulated within the CBT framework. This model reflects the intricate nature of emotional processing by detailing various factors and mechanisms involved (Figure 1).

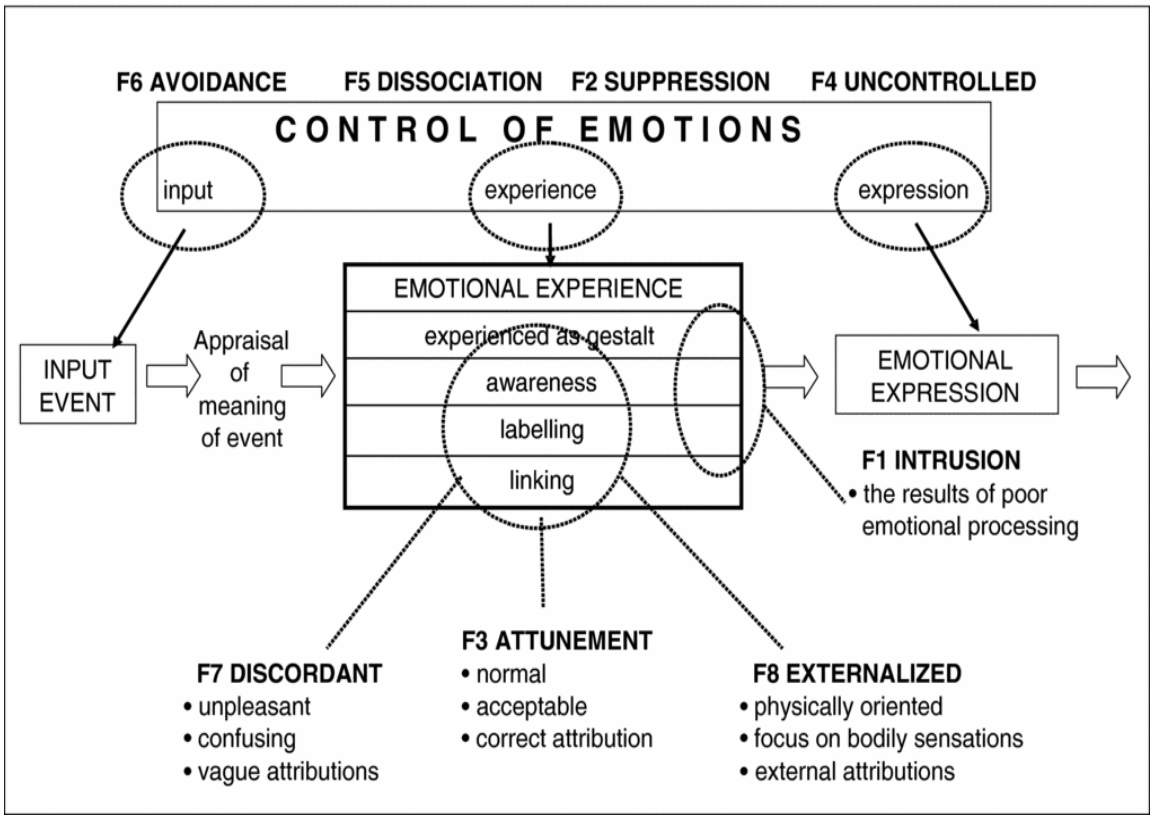

Figure 1 From Model of Main Domains of Emotional Processing (Baker et al., 2007b, as cited in Kemmis et al., 2017)

Applying Dual-Process Theory and 4E Cognition to Baker's Model

Input Event: When an event occurs, System 1 swiftly generates an automatic emotional response based on past experiences and learned heuristics. This immediate reaction can be mapped to the 'Appraisal of meaning of event' stage in Baker's model, illustrating the role of intuitive and embodied cognition in initial emotional processing. System 2 engages subsequently, allowing for a more reflective and conscious analysis of the event's meaning, which aligns with the embedded and extended aspects of 4E cognition.

Appraisal of Meaning of Event: System 2's involvement enables a more deliberate, reflective interpretation of the event, facilitating deeper emotional understanding and adaptive responses.

ISSN: 3035-062X
2024, 1(2)
Preliminary Reports and Negative Results in Life Science and Humanities

The 4E framework suggests that this appraisal is not just a mental exercise but is shaped by interactions with the environment and influenced by social norms and bodily states.

Emotional Experience: System 1 predominantly drives the 'experienced-as-gestalt' phase, producing immediate emotional awareness that is felt throughout the body (embodied cognition). System 2's role becomes significant when the individual attempts to label and connect these emotions to their causes, a process requiring conscious and analytical thought that reflects the embedded nature of cognition.

Emotional Expression: This stage involves a blend of System 1 and System 2 processes. System 1 triggers spontaneous expressions of emotion, while System 2 regulates and modifies these expressions in social settings, reflecting an adaptive process that is enacted through interactions with others (enactive cognition).

Feedback Loops: Quick responses from System 1 can create reinforcing feedback loops if left unchecked, potentially entrenching biases. System 2 introduces a reflective loop that allows for re-evaluation and adaptive learning. 4E cognition underscores that these loops are not only cognitive but also shaped by physical experiences and external interactions, demonstrating how the environment and social cues contribute to emotional regulation.

Factors in Emotional Processing and the Role of Systems 1 and 2

Attunement (F3): Primarily involves System 2, requiring conscious effort to align emotional responses with the context. However, learned, intuitive responses (System 1) can support attunement over time through embodied interactions.

Uncontrolled Expression (F4) and Suppression (F2): Uncontrolled expression typically reflects System 1's dominance, while suppression involves System 2's regulation to inhibit automatic responses. These processes can be understood more deeply through 4E cognition, as the body and social environment play roles in how emotions are expressed or withheld.

Avoidance (F6), Dissociation (F5), and Externalised Focus (F8): These mechanisms can be driven by automatic (System 1) responses or deliberate (System 2) coping strategies. Avoidance and dissociation are influenced by the body's need to protect itself (embodied cognition), while externalised focus may involve external tools or supports (extended cognition).

Discordant Processing (F7): Occurs when there is a conflict between System 1's intuitive responses and System 2's rational analysis, potentially leading to emotional dysregulation and psychological challenges. This discrepancy is often shaped by the body's response to stress and the environment's impact on perception.

Integrating Emotion, 4E Cognition, Dual-Process Theory, Homeostasis, and Autopoiesis in CBT Clinical Practice

To illustrate the integration of Dual-Process Theory, 4E Cognition, emotion, homeostasis, and autopoiesis in CBT, it is beneficial to revisit a case example described by M. Scott Peck in The Road

ISSN: 3035-062X
2024, 1(2)
Preliminary Reports and Negative Results in Life Science and Humanities

Less Travelled (Peck, 1978). In this narrative, Peck discusses clients who seem 'resistant to assistance' despite his genuine efforts:

Client (C): “There’s nothing else to do in the evenings in Okinawa except drink.”
Therapist (T): “Do you like to read?”
C: “Oh yes, I enjoy reading.”
T: “Then why don’t you read in the evening instead of drinking?”
C: “It’s too noisy to read in the barracks.”
T: “Well, then, why don’t you go to the library?”
C: “The library is too far away.”
T: “Is the library farther away than the bar you go to?”
C: “Well, I’m not much of a reader. That’s not where my interests lie.”

This example underscores the challenges of client resistance, which can be better understood through the combined lenses of 4E Cognition, Dual-Process Theory, homeostasis, and autopoiesis.

Interaction with the Client: Integrating 4E Cognition, Dual-Process Theory, Emotions, Homeostasis, and Autopoiesis

4E Cognition:

1. *Embodied Cognition:* The client’s habit of drinking is tied to bodily cravings and stress-relief mechanisms, reflecting an embodied response to their psychological state.
2. *Embedded Cognition:* The noisy barracks environment influences behaviour, illustrating that cognition is shaped by the external environment, which constrains alternative activities like reading.
3. *Extended Cognition:* The client's cognitive resources extend into the environment, where external supports (e.g., access to a library or quiet spaces) are limited, thus reinforcing habitual behaviour.
4. *Enactive Cognition:* The act of drinking is an ongoing, dynamic response, reflecting the client’s interaction with their surroundings and their self-concept as someone who does not prioritise reading.

Dual-Process Theory adds another layer by explaining the interaction between automatic, intuitive responses (System 1) and reflective, analytical processes (System 2):

System 1: The client’s automatic response to seek comfort through drinking arises from ingrained habits and emotional triggers. This process operates quickly and is influenced by embodied, habitual reactions.

System 2: When prompted by the therapist, System 2 engages in reflective thought. However, without addressing the environmental and bodily constraints highlighted by 4E Cognition, System 2’s analytical process may be overridden by the stronger, habitual responses of System 1.

Homeostasis provides a framework for understanding the client’s behaviour as an effort to maintain psychological equilibrium. Drinking serves as an adaptive strategy to manage stress and

ISSN: 3035-062X
2024, 1(2)
Preliminary Reports and Negative Results in Life Science and Humanities

emotional discomfort, functioning as a homeostatic mechanism that regulates emotional states through familiar, embodied responses.

Autopoiesis suggests that the client's behaviour reflects a self-sustaining, self-organising process. The act of drinking is not just a reaction but part of an autopoietic cycle where the client's identity and habits are maintained through repeated interactions with their environment. This self-perpetuating cycle resists change unless the system is perturbed in a meaningful way.

Integrating Homeostasis and Autopoiesis with Dual-Process Theory, 4E Cognition, and Emotion

The client's resistance can thus be seen as an outcome of multiple interacting processes:

Homeostatic Regulation: The client's behaviour aims to maintain emotional balance through System 1's quick, embodied responses. However, these responses are contextually embedded and influenced by environmental factors (e.g., the noisy barracks), limiting the effectiveness of System 2's logical interventions.

Autopoietic Processes: The client's identity as someone who drinks to manage stress is an expression of autopoiesis, where their behavioural patterns sustain themselves through repeated enactment. To disrupt this cycle, therapy must engage both System 1 and System 2 processes, addressing embodied, embedded, and extended factors that maintain the cycle.

Emotional Processing: Emotion is the driving force behind both System 1's automatic responses and System 2's attempts at regulation. The client's emotional state influences their embodied cravings and habitual responses, making it crucial for therapy to consider both intuitive emotional reactions and reflective emotional understanding.

Conclusion

Integrating the principles of Dual-Process Theory, 4E Cognition, homeostasis, and autopoiesis offers a comprehensive and enriched framework for CBT. This integrated approach enhances the traditional CBT model by acknowledging that client behaviours and emotional responses are not just the products of isolated cognitive events but are deeply influenced by a complex interplay of automatic (System 1) and controlled (System 2) processes. Recognising these interactions allows therapists to better understand how deep-seated beliefs, biases, and habitual responses shape behaviour and emotion, highlighting the importance of addressing both intuitive and analytical cognitive dimensions.

The application of 4E Cognition principles further enriches this understanding by incorporating the embodied, embedded, extended, and enactive aspects of human cognition. This perspective acknowledges that cognition is not confined to the brain but extends to the body, environment, and interactions with the world. Emotions, similarly, are not merely internal experiences but are embodied states shaped by context and expressed through social and environmental interactions.

Incorporating the concepts of homeostasis and autopoiesis into this framework further deepens the understanding of client behaviour. Homeostasis, as the body's and mind's way of maintaining

ISSN: 3035-062X
2024, 1(2)
Preliminary Reports and Negative Results in Life Science and Humanities

equilibrium, shows that behaviour often serves as a regulatory mechanism aimed at preserving emotional and psychological balance. Autopoiesis, the self-organising nature of living systems, suggests that clients' habitual behaviours and identities are maintained through continuous interactions with their environments, guided by the inherent intelligence of System 1 processes. Recognising these self-sustaining processes allows therapists to identify where change can be meaningfully introduced to disrupt maladaptive cycles and foster adaptive growth.

By adopting an integrated perspective that includes the principles of Dual-Process Theory and 4E Cognition alongside homeostatic and autopoietic functions, therapists can develop more holistic and effective interventions. This approach expands upon traditional cognitive and behavioural strategies to include the embodied experiences, contextual realities, and the interplay of automatic and reflective processes that shape client behaviours and emotions. Such a comprehensive framework empowers therapists to connect with clients on a profound level, addressing both their immediate cognitive patterns and the intricate, layered interactions that sustain them over time. In practical terms, a therapist informed by these integrated principles would explore the client's embodied experiences of stress, consider the embedded nature of their environments, and utilise external resources or adaptations that extend cognitive processes. By doing so, therapy becomes not just about changing thoughts but engaging with the full range of human cognition, creating space for clients to transform their enactive identities and build adaptive, sustainable behavioural patterns. This expanded view of CBT fosters deeper emotional regulation and resilience, aligning therapeutic practice with the complexities of human cognition and behaviour.

References

Alford, B. A., & Beck, A. T. (1997). *The Integrative Power of Cognitive Therapy*. Guilford Press.

Beck, A. T. (1970). Cognitive Therapy: Nature and Relation to Behavior Therapy. *Journal of Psychotherapy Practice and Research*.

Beck, A. T., Rush, A. J., Shaw, B. F., & Emery, G. (1979). *Cognitive Therapy of Depression*. Guilford Press.

Cannon, W. B. (1932). *The Wisdom of the Body*. W. W. Norton & Company.

Clark, A. (1997). *Being There: Putting Brain, Body, and World Together Again*. MIT Press.

Clark, D. A. (1995). Perceived limitations of standard cognitive therapy: A reconsideration of efforts to revise Beck's theory and therapy. *Journal of Cognitive Psychotherapy*.

Clark, A., & Chalmers, D. (1998). The Extended Mind. *Analysis, 58*(1), 7-19.

Costanzo, L. S. (2018). *Physiology* (6th ed.). Elsevier.

DeRubeis, R. J., Siegle, G. J., & Hollon, S. D. (2001). Cognitive therapy versus medication for depression: Treatment outcomes and neural mechanisms. *Nature Reviews Neuroscience*.

Google search, Does CBT deal with emotions? (Accessed Google search on October 13, 2022).

Hackmann, A. (1997). A Cognitive-Behavioral Approach to Imagery in Cognitive Therapy. In *Imagery in Psychotherapy*. American Psychological Association.

Kahneman, D. (2011). *Thinking, Fast and Slow*. Farrar, Straus and Giroux.

ISSN: 3035-062X
2024, 1(2)
Preliminary Reports and Negative Results in Life Science and Humanities

Kemmis, L. K., Wanigaratne, S., & Ehntholt, K. A. (2017). Emotional Processing in Individuals with Substance Use Disorder and Posttraumatic Stress Disorder. *International Journal of Mental Health and Addiction, 15*, 900–918.

Lawson, R. (2005). The Science of Cycology: Failures to Understand How Everyday Objects Work. *Memory & Cognition*.

Maturana, H. R., & Varela, F. J. (1973). *Autopoiesis and Cognition: The Realization of the Living*. D. Reidel Publishing Company.

Neisser, U. (2014). *Cognitive Psychology: Classic Edition*. Psychology Press.

Peck, M. S. (1978). *The Road Less Travelled: A New Psychology of Love, Traditional Values, and Spiritual Growth*. Touchstone.

Porges, S. W. (2007). The polyvagal perspective. *Biological Psychology, 74*, 116-143. https://doi.org/10.1016/j.biopsycho.2006.06.009

Teasdale, J. D. (1997). The relationship between cognition and emotion: The mind-in-place in mood disorders. In *The Science of Mental Health: Vol. 2, Depression*. Psychology Press.

Van der Kolk, B. (2014). *The Body Keeps the Score: Brain, Mind, and Body in the Healing of Trauma*. Viking.

Varela, F. J., Maturana, H. R., & Uribe, R. (1974). *Biological Foundations of Cognition*.

Varela, F. J., Thompson, E., & Rosch, E. (1991). *The Embodied Mind: Cognitive Science and Human Experience*. MIT Press.

Online on the December 2024