

ORIGINAL PAPER

Reframing Cognitive Behaviour Theory from a Systems Perspective

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Published online: 27 December 2017 © Springer Science+Business Media, LLC, part of Springer Nature 2017

Abstract The author has worked with Cognitive Behaviour Theory for many years. His interest in systems theory prompted him to explore CBT from a systems perspective. This led to six observations that are then explored. This paper therefore begins by looking at the linearity of CBT and how feedback loops might be better incorporated. Next, the nature of perception is explored with ideas from Maturana and others. The third aspect investigates core beliefs and how they impact at all steps of the decision-making process. Fourthly, an examination of thoughts and emotional revealed other ways we make sense of the world and challenges the idea that thinking precedes emotion. The next aspect looks at CBT's assumption of the individual as a separate being rather than a systems view which sees a person highly interconnected and finally that CBT focuses on making sense of the present moment rather than predictions we make of likely future outcomes. This is then all brought together in a diagram reframing CBT, highlighting the centrality of awareness to all cognitive processes and a number of leverage points where change might emerge.

Keywords Cognitive behaviour theory · Core beliefs · Perception · Boundaries · Anticipation

Introduction

Cognitive Behaviour Therapy (CBT) (Beck 1979) has become accepted as the most commonly used technique to treat a wide range of problems including depression, anxiety, PTST, addictions, violence, eating disorders, bipolar and psychotic behaviour. Although CBT has been linked right back to Epictatus and the Stoics, CBT really arose out of the mainstream scientific thinking of the twentieth century leading to Rational Emotive Behaviour Theory and Cognitive Therapy, which then culminated in the formation of CBT (Craske 2017). Other

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theories like Dialectic Behaviour Therapy (DBT) (Linehan et al. 2006) have sprung out of CBT to help make it more effective. Having reached such prominence, the underlying assumptions of CBT are rarely scrutinised, which could lead to CBT not realising its full potential.

Some research is showing that CBT may not be as effective as first thought (Baardseth et al. 2013; Johnsen and Friborg 2015; Sundquist et al. 2015). A common criticism of CBT sees it merely as a band-aid that stops the bleeding and keeps out infection, without addressing the underlying problem. While that may be so, there is value in a band-aid for non-serious wounds. It stops the bleeding and keeps out infection, giving the body a chance to heal itself. CBT may give the alcoholic an experience of sobriety or a violent offender time out of prison that at least provides a useful reprieve to work on deeper causes.

The mainstream cartesian thinking at the time when CBT was developed, postulated a world comprising separate objects linked by simple cause and effect chains. This view of the world is questioned by systems thinking as it has been developed by many researchers and thinkers over the decades (Skyttner 2008). The aim of this paper is therefore to use systems principles to reframe CBT to see whether a new synthesis might prove more efficacious.

This paper does not aim to discredit or replace CBT. The author has been using CBT as a key tool in work with offenders for around fifteen years. While he has found it to have elicited many changes in behaviour, a systems perspective revealed six observations:

Core Beliefs, Event, Thoughts, Feelings, Decision, Action, Consequences

From this, he made the following observations:

- CBT tends to present itself as a simple set of linear steps one after another or as a simple unidirectional cycle causation (i.e. Thinking leads to emotions leads to behaviour leads back to thinking). While this has the advantage of being simple to explain to a client, it is less able to convey the complexity and accurately describe the processes involved in decision making. Other more complicated versions of CBT include aspects such as schemas and recognising body sensations.
- The entire process of perception is assumed. It is assumed that whatever is perceived is the real world as it is, though people will interpret it differently. This paper proposes that perception is not as straight forward and understanding the process of perception is critical to understand the overall process of decision making,
- Core beliefs are typically presented as one step in a linear process. In fact, core beliefs impact at every step in the process,
- 4. CBT focuses on thoughts and emotions, and proposes that thoughts precede emotions. It also presents rational thinking as the means to effect change. An embodied approach sees body, mind, emotions and spirit as interdependent, mutually arising aspects of the process of sense-making, all of which need to be activated in balance for the best response to any situation,
- 5. CBT assumes that thoughts and emotions arise in response to the events of the present moment. This paper proposes that thoughts and emotions (and other sensing) enable us to use our learning from past experiences to make an assessment of likely future outcomes. We choose our present action based on our forecasts of the future, rather than what we perceive in the present moment,

6. CBT does not have an explicit reflecting and learning component. It is implied when an alternative thought is used rather than an automatic thought, but there is value in exploring reflection and learning more explicitly.

This paper will now explore each of these observations in turn before developing a reframing of the Cognitive Behaviour model.

Linearity

Snowden and Boone (2007) show that there are four types of system: simple, complicated, chaotic and complex. A manual water pump is a simple system. If we pump the handle twice as fast, we double the water pumped. It is easily predictable. A jumbo jet is a complicated system. It is difficult to understand, but with enough effort it becomes highly predictable. Chaotic systems like the weather or a fire have a level of predictability in the (very) short term (Gleick 1987; Lorenz 1963) but are generally unpredictable. Complex systems, which includes all living systems and systems with living creatures in them such as an organisation or an economy, are still not predictable, but significant underlying patterns are observable (Stacey 1996). CBT is designed to work with complex systems.

It is very tempting to use a simple solution for a complex problem. It may appear to be effective at first glance but this inevitably leads to unintended consequences. People call for more severe punishments for criminals, expecting to solve the problem of crime without seeing the connections to education, poverty, mental health and many other relevant factors. CBT is a very simple model to explain a complex situation. Bateson (G. Bateson 2000; N. Bateson 2010) warns us that 'The major problems in the world are the result of the difference between how nature works and the way people think.'

It is very easy for a therapist to have a fixed idea of the goal of the therapy and impose their own value judgements on the types of alternative thinking to be incorporated by the client. A systems approach encourages leaving space open for previously unconsidered goals that may be more effective than those first chosen (Capra and Luisi 2014).

Perception

CBT assumes that we experience the world directly as something "out there", but may interpret our experience differently. It is more complicated than that. When we hear a clock tick, we assume we are experiencing the clock as it is. The movement of the clock, however, causes sound waves that reach our ear and are translated into electrical signals sent to the brain. The brain then constructs an experience for us based on to the signal received. What we 'hear' is the experience generated in our brain and gives no indication of what 'sound' was actually made out in the world. We can only ever experience what is generated in our brain (Maturana 2002; Maturana and Verden-Zoller 2008).

We perceive our world within the limits of the instrument (the body including the brain and its cognitive capacities) that we have to sense it. Maturana (2002) calls this structural determination. Many animals see different colours or hear different sounds from us. The cones in women's eyes are different from men's. We literally see a different world. People who are taller or shorter experience the world differently.

The brain cannot process all the sensory input it receives in real time, so it selects what it perceives to be the most critical data. Past experience has shown certain patterns are generally

predictable, so assumptions are made based on past patterns. These are most usually correct, but not always. We tend to perceive what we expect to be rather than what is. Optical illusions highlight situations where the expected pattern results in misperceiving the situation.

A person who has negative beliefs about themselves and the world they live in will select incoming data that supports their negative interpretation. A depressed person will literally see the world as a darker place because those darker colours will be prioritised for attention (Bubl et al. 2010). We will orient our body in such ways that we are more likely to perceive information that supports our existing interpretations. We move in particular ways to choose to perceive or avoid perceiving some event.

Most people would think that the role of the brain is to construct an experience that directly aligns to the 'real world'. In actual fact, because we are primarily survival machines, our brain constructs the experience that will best ensure our survival (Hoffman 2009). An example of this is when we catch a ball. At a particular moment in time the ball is at a point in space in front of us. We must assess where the ball is, what its speed is, the direction and angle of the ball and put all this together to predict where we should put our hand to catch the ball. The problem is that this process takes time and by the time we have assessed the situation the ball is in a new place. Our brain therefore constructs the experience for us of the ball being where it will be by the time the information has been processed, so we can catch the ball.

Hoffman (2009) also likens our perception to a computer interface. What is on the desktop screen is not an accurate representation of the files as they are in the computer, but rather a depiction that enables us to work with the information in useful ways. Our experience is designed to build fitness to ensure survival and wellbeing, not as an accurate representation of the world.

Boundaries

Returning to our clock metaphor, our heart inside our body makes a repetitive noise sometimes described as 'lub-dub'. Just like the clock's tick-tock, electrical signals go to the brain, where the brain constructs an experience based on the information received. We do not experience our heart, we experience a construction created by the brain. This means that from the point of view of the brain, the clock outside and the heart inside our body are similarly constructed. There is thus no boundary between myself and the outside world. Any boundary that does exist is itself a convenient construction so that we can make sense of our experience. It is all just a construction (Wilber 2001). Boundaries have no intrinsic reality, they are placed by the mind. Everything is thus connected and one, and boundaries that both include and exclude are imposed on top of the experience. Wes Churchman reminds us 'that what is to be included or excluded for any analysis of a situation is a vital consideration' (Churchman 1970).

We place boundaries (Cabrera and Cabrera 2015; Midgley et al. 1998) to keep ourselves safe and protect ourselves from potentially harmful external elements. We have boundaries around our body, our family, our community and nation. Gottman and Gottman (2015) note that a relationship is generally strong if both partners place their relationship boundaries to include them both. They may disagree with the other and be angry at them, but they still see them as 'on the same side'. A soon as one starts to see the other as 'the cause of my problems' or 'less than me' and shifts them outside the relationship boundary, a tipping point (Gladwell 2001) has been crossed in the relationship, from which it is extremely difficult, if not impossible to recover (Gunderson and Holling 2002).

Threats

A complex adaptive system (Stacey 2011) will structure itself to be as responsive as possible to the environment it finds itself in. Its prime directive is to maintain its existence. It thus has needs (Maslow 1943) to be maintained for it to continue to grow and flourish. A human complex adaptive system has multilevel needs to maintain across all boundaries. When someone perceives that their needs are not met, what is seen as the cause of the unmet need generally becomes a interpreted as a threat. Most usually the threat is seen as something external. What is outside the boundary therefore easily becomes labelled as the 'other' (Midgley et al. 2014; Milojevic 2013), making it easier to perpetrate violence towards them.

Awareness

Perception is a part of the wider area of awareness. We perceive according to the level of our awareness in the moment. Tiredness, illness, boredom, hunger, alcohol and/or drug use can all have an impact on our ability to perceive what is happening in our world. Mindfulness (Hanh 1995) is the skill of building our awareness of the present moment. We become more aware of our internal states, the environment in which we find ourselves, and the relationship between the two. The greater our awareness of a situation, the greater the chances that we will respond expeditiously and effectively. CBT focuses more carefully on thoughts and emotions, but there are more ways of perceiving our world that help build awareness. Spiller et al. (2015) explored how traditional Polynesian navigators developed their sensitivity to their environment to pick up subtle signals from tides, currents and waves and more. They used their whole being to sense (Scharmer and Kaufer 2013) their world. One of their techniques was to lie in the hull of their waka (canoe) and feel the motion caused by the waves. Waves coming from an island had a different feel and would lead them home.

By increasing our awareness, we are more likely to use our pre-frontal cortex rather than our more primitive mid-brain. The mid-brain controls the fight/flight response and focuses on what will keep me alive in the immediate moment, i.e. ME-NOW. The pre-frontal cortex enables us to consider the future impact of our actions (foresight) and the impact it will have for others (empathy), i.e. US-FUTURE. Perspective taking where we become aware of how others might experience a situation differently helps expand awareness and leads to wiser decision making (Cabrera and Cabrera 2015).

Core Beliefs /World View/Schema

When a baby finds itself 'thrown' into the world (Heidegger 2010), it must make sense of its experience so it can find appropriate ways to respond to those experiences. From among the overwhelming mass of data through all the senses, the baby looks for patterns to guide it setting boundaries that will make the world comprehensible (G. Bateson 2000). The first boundary is that of inside and outside (Lakoff and Johnson 1980a). The baby senses its hand both as an object in the world 'out there' and as something internal it can feel and have a level of control over. The baby notices that this is also so for leg, foot, arm and stomach, but not for door, cot and toy. A boundary is then set delineating 'me' from the outside world. Some things like the mother's breast and food would, for a while at least, sit confusingly both inside and outside. Other distinctions follow: up-down, back-front, light-dark.

The baby has entered duality. Objects and people become separate objects or beings. These separate objects then get tagged, such as safe or unsafe, pleasant or unpleasant. These basic metaphors, which George Lakoff (Lakoff and Johnson 1980b) postulates actually have physical correlates as connections between neurons in the brain, become increasingly complex. Layer upon layer of metaphor is built forming an internally consistent network of metaphorical connections that it uses as a guide or a 'map' with which to 'navigate' the environment in which it finds itself. The baby tends to seek out what is experienced as safe and pleasurable and to avoid what is unsafe and unpleasant.

This process is very heavily influenced by the other people in their world. Our early human ancestors found they could align their individual maps enough to be able to communicate. This was especially heightened when shared language patterns were developed and people could talk to one another (Casey and Brugha 2004; Maturana and Verden-Zoller 2008; Pinker 2007). Our parents and society define a huge part of our worldview in ways that mould us to become compliant to the needs of the society. In general, the baby soaks up anything it learns from an adult presuming it to be true. By the age of seven, the map is largely formed, and for many people there is subsequently little or no revision to this map.

We are thus caught in a double bind (Bateson 2002). Without this map, we cannot survive or take part in society, but the map limits our potential and forces us to conform in ways that harm us and detract from our full potential. Christian (2011) links this to the shift from using explicit violence to enforce conformity to individual self-discipline to conform, which resulted in repressed creativity and anomie (Durkheim 1979).

Based on their individual experience a baby creates a map that includes:

- · Their sense of themselves and their place in the world
- The other people in their life
- The world they live in
- The future.

A person who has had a positive, supportive upbringing will usually form a worldview where they see themselves as a valued, worthwhile human being, who if they apply themselves can achieve the goals they set for themselves. They will see others as people who will support and help them to attain their goals and be able to build that support with those people to form deep meaningful relationships. The world will be seen as a place where there are sometimes adverse experiences, but taken altogether, life is a wonderful, life affirming experience. The future is seen as an opportunity for growth and learning.

A person who has not had such advantage in their upbringing is more likely to have a worldview, where they believe they are useless, worthless and an impediment to other people. Other people will be out to get them and cannot be trusted. The world is a dog eat dog place where you have to hit first or you don't survive. The future becomes a place of dread.

Each person thus formulates a map with which to navigate the situations they find themselves in. Some people have developed effective maps that lead them towards a life they seek, while others, much like an explorer with an inaccurate map, find themselves lost and far from where they wanted to be.

Just as an individual forms a set of beliefs or worldview that guides their life decisions, our overall society also formulates a worldview stipulating what is acceptable and what is not. These become enacted into the laws of the land. Just as an individual may form a worldview that does not map well back to 'reality', a society's belief system may be distorted. Patriarchal

thinking (Eisler 1988; Eisler and Loye 1990; hooks 2004) has long held sway over western society and distorted our worldviews with racism, sexism and other forms of structural violence that have been woven into the social structures from education to health to the media to the legal and criminal justice systems. An individual's core beliefs can clash with those of the society in which they find themselves, either because they are unable to meet the standards of the society, or because the individual has grown past the distortions within the societal values (Kohlberg 1984). Either way the punishment of the system can be harsh.

Once core beliefs are formed they become a part of our identity to be guarded just as carefully as our physical body. Anything I experience that contradicts my beliefs and values becomes seen as a threat to my identity, to my existence. Thus, we seek out that which reinforces our existing beliefs and resist anything that contradicts them even if they might seem to others to be patently irrational. We use denial, minimisation, blame and justification as cognitive distortions (Cameron 2013) to help us resist challenges to our existing mode of perceiving the world.

CBT uses the term schema (Padesky 1994) to mean:

An internal model of the self and the world that is used to perceive, code and recall information. Schemas are adaptive to the degree that they facilitate the processing of a significant amount of information we encounter in daily life (Craske 2017, Location 862).

A set of core beliefs form a schema. The core beliefs within the schema will be internally consistent and support each other in guiding the individual to navigate their lives.

Worldview is another term similar to schema and core beliefs. Inayatullah and Milojevic (2015) devised Causal Layered Analysis as a means to exploring any situation. Four levels of enquiry, one being worldview, are utilised. The litany is the everyday level of unquestioned events such as in a newspaper headline. The systems level described the social systems in place that enable the litany. Then the worldview level is the shared beliefs that maintain social cohesion and finally the myth/metaphor level, which includes the metaphors and stories undergirding the worldview. This interestingly links core beliefs to Lakoff's work on metaphors.

Thoughts and Emotions

CBT prioritises rational thinking assuming that distorted core beliefs and poor emotional regulation lead to irrational and negative thinking that leads to poor decision making. Therefore, developing rational, logical thinking skills will help people to cope better and lead to better decision making in difficult situations. After the November 2011 Christchurch earthquakes in New Zealand many people were too afraid to go into shopping malls or other large public spaces in case there was another earthquake. This created problems in their everyday life. The February 2012 Christchurch earthquake in which 185 people died, clearly showed that those fears were in fact quite rational. There may well be people who are still alive today because their fear of being inside a large building kept them outside at the time of the second major quake.

In interviewing perpetrators of domestic violence, one often hears, "I just knew she was cheating on me and it made me so angry". Most of us would consider this to be an irrational fear that might be amenable to a CBT approach, however, for many perpetrators of domestic violence, their past lived experience tells them that sooner or later their partner will cheat on them. For them in their world, the fear is a rational fear.

CBT proposes that thoughts appear before emotions (Wallace 2016). It would be reasonable to expect that a more primitive emotional response would require less cerebral computation and thus be quicker than a thought, which needs to connect with past memories, compare ideas and formulate a response into language. A systems approach, however, would suggest that the question of what precedes what is not that relevant. Our response is seen as a wider whole being response rather than just thoughts and emotions. Body, mind, emotions, and spirit (for the sake of having four convenient categories) are all involved in making sense of our experience. Further, those aspects are not separate, but rather they are interdependent. Bausch (2010), following a phenomenological line of thought arising from Husserl, Heidegger and Merleau-ponty claims that the body is fundamental and that the others spring from the body. Damasio (2000) also proposes that the body is primary. The body responds directly to the outside environment. He then says the messages subsequently sent to the brain generate emotion and when those messages are processed they generate feelings. Thinking would then follow. Thus strategies on working with the physical body, particularly those which give us greater skills in activating the parasympathetic nervous system would be useful complement (Alexander and Daley 2011). A whole being response would include instinct and intuition as ways we make sense of the world.

DBT (Linehan et al. 2006) was developed as a specific form of CBT with a greater emphasis on tolerating negative emotion and social aspects of behaviour. It emphasises mindfulness as a tool to cope with overwhelming emotions. Mindfulness can help inhibit the immediate threat response and give enough delay for the thinking response to emerge.

Separate individuals or co-dependent arising

CBT is based on the individual person as a separate agent who operates in a real world 'out there'. The individual is responsible for themselves. This is a particularly western concept that is not shared by many cultures. The Maori of New Zealand have a saying, 'Ehara taku mana i te mana takitahi, engari i te takimano (My strength does not come from me alone, but from my interconnectedness to the many)'. This clear separation of the individual within CBT makes it easy to lay the labels of offender - victim or guilty – not guilty and so forth and avoids acknowledging the complexity of human interactions. Complex systems, which includes all living systems, are interconnected to the point that the usual rules a of cause and effect no longer operate and an individual thus becomes far less predictable and open to external influences.

A more systems based approach would stress the inter-dependence and connectedness with other people. Maturana (Maturana 2002; Maturana and Verden-Zoller 2008) described the relational space as a space that opens up when two people interact. Thich Nhat Hanh (Hanh 1987) uses the term interbeing and Jung (1968) used the term collective unconscious. Neither is in control of the interaction, but both influence it. Neither can predict with any certainty about how the interaction will proceed, because either can move onto a different line of thought at any time. Over time the two participants in the interactions adapt to each other in ways that change both of them as they become synergistically linked. This is a bit like the Egyptian plover, which has a symbiotic relationship with crocodiles, so that it flies into the crocodile's mouth to eat food in its teeth. While the crocodile could easily eat the plover, it does not because they have formed a mutually beneficial symbiotic relationship.

Because we are interconnected, there are constant flows (Csikszentmihalyi 2004) across the boundaries linking 'separate' people; flows of food, conversation and dialogue, emotion and

affection are necessary to maintain wellbeing. Ideas are exchanged that may become integrated into the other person's core beliefs. Gottman and Gottman (2015) talks of 'bids' between marriage partners. These are small gestures, such as a smile, a comment or a touch that indicate an attempt for emotional connection. In positive relationships these bids flow freely and are most usually accepted and responded to.

We constantly extend ourselves in world. We use a stick to extend our arm, a phone to extend our voice, and street signs to extend our memory, which further blurs the line between being a separate self and an interconnected part of a larger network. Laszlo (1996) notes how we everything in world of time and space is actually connected through the quantum vacuum and is thus one.

Anticipation

The CBT model assumes that we respond to events that happen in the present moment. An event happens and we have thoughts and emotions about the event, from which we decide on an action. In fact, almost always, we are responding to our forecast of what will happen in the future. This anticipation (Rosen 2012) of future events is a vital skill that has made us much more adaptable that other creatures.

All life is in fact anticipatory. The seed anticipates the spring when it will grow into a plant. When driving we see a child run out onto the road and forecast that if we do not take evasive action, the child will be harmed. When we walk down the road we do not look at our feet. We already know what is at our feet. We look ahead to hazards like a pothole that we can then avoid entirely rather than responding when we get to it. If somebody looks threatening and combative, we do not wait until they strike. We walk away, step back, make calming statements, or whatever is needed to diffuse the situation before it arrives.

In order to anticipate the future (Inayatullah 2008), we must retrieve information from our past about similar events that can guide our actions. We go back to our core beliefs and values to gain an understanding of the present. This means, of course, that our forecast of the future is coloured by our interpretation of past events. Different people coming across somebody who is threatening and combative will generate different forecasts of what will happen depending on their previous experiences and interpretations they have developed about those situations. This links core beliefs developed from past experience more closely to the decisions made in the standard CBT model.

Learning and Reflecting

Learning and reflecting is not explicit in the CBT model. Learning is a critical stage in a feedback loop so an organism can increase its ability to respond effectively. Bateson's (2000) levels of learning (Tosey 2006) is useful to understand the role of learning. Level 0 is an automatic response, such as the patella knee reflex. Level I learning is where there is a choice of responses. There might be a habitual response of anger and an alternative possible response of walking away from the situation. If we are able to reflect on the choices and generate further choices we use Learning II. It also includes seeing the situation in context rather than just applying a rule. Here we are able to reflect on our situation to again greater insight rather than just choose the best response from those previously used. Moving to Learning III we learn to reflect on our reflection. We can ponder how we reflect to find more effective ways of reflecting on our situation. Reflecting allows us to generate a preferred future (Inayatullah 2013; Inayatullah and Milojevic 2015) to help guide present action.

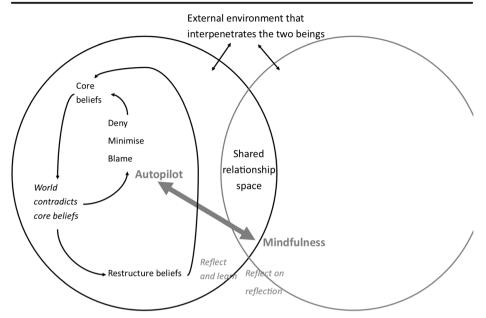


Fig. 1 Core beliefs lie as a foundational platform informing all aspects of the decision-making processes. The external environment is also totally enmeshed and interacting with core beliefs. With low levels of awareness core beliefs remain unaltered and there is no learning. With awareness core beliefs can be restructures for the person to become more adaptable and respond more effectively

The greater level of awareness is necessary to operate at higher levels of learning. The ability to see things from a different perspective broadens our appreciation (Vickers 1968) of our situation and increases our options for deciding on the most appropriate response.

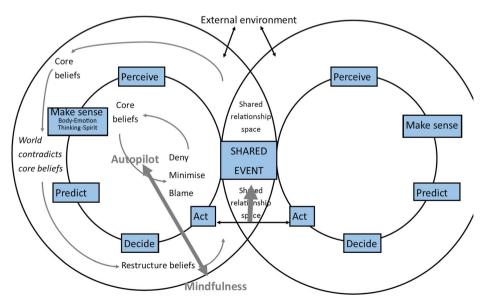
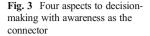


Fig. 2 The decision-making cycle sits on top of the foundational core beliefs and external environment





Pulling it all Together

Having now discussed each of the observations about CBT, we are in a position to reframe the linear steps into a new diagram that shows more clearly how the parts are linked and how we make decisions. Figure 1 depicts the foundation upon which the decision-making process sits, while Fig. 2 shows the decision-making process with the foundation underneath making a three-dimensional figure because core beliefs impact all phases of the decision-making process.

In Fig. 2 thoughts and emotions of CBT are expanded to become whole-being sense making. The event becomes shared and structurally coupled with the person being interacted with. An anticipatory aspect is added into the process so future forecasts inform present decision making. This model provides a greater insight into the processes involved in making sense and decision making and how the various aspects relate to each other so that non-violent alternative behaviours can be established. From Fig. 2 five key areas are identified as learnable skills that can be used as leverage points (Meadows 2008) to learn non-violent and non-abuse ways of coping with stress and anxiety. This is depicted in Fig. 3.

Note that awareness sits in the middle because it links to all the others. Developing awareness skills in all its aspects is therefore a very powerful tool available to anyone wishing to reduce abusive behaviours. There are many established tools and techniques that can be used to teach the many aspects of awareness.

With a reframed picture of CBT, we can more clearly see how all the various aspects relate to each other. This model can be used to create a more integrated strategy that could extend the applicability of CBT. Such a more holistic approach is more likely to find a pathway to making changes than the more focused traditional approach of CBT.

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