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The third wave of cognitive behavioral therapy and the rise of process-based care

The term cognitive behavioral therapy (CBT) identifies a family of interventions that are widely recognized as the set of psychological treatments with the most extensive empirical support¹. CBT is not monolithic, however, and it has been through several distinct eras, generations, or waves. The first generation of this tradition was behavior therapy: the application of learning principles to well-evaluated methods designed to change overt behavior. By the late 1970s, behavior therapy had moved into the era of classic CBT: a new generation of methods and concepts focused on the role of maladaptive thinking patterns in emotion and behavior, and the use of methods to detect and change those patterns.

The arrival of a “third wave” of CBT was declared 13 years ago². The claim was that a change was occurring in orienting assumptions within CBT, and that a set of new behavioral and cognitive approaches were emerging based on contextual concepts focused more on the persons’ relationship to thought and emotion than on their content. Third wave methods emphasized such issues as mindfulness, emotions, acceptance, the relationship, values, goals, and meta-cognition. New models and intervention approaches included acceptance and commitment therapy, dialectical behavior therapy, mindfulness-based cognitive therapy, functional analytic psychotherapy, meta-cognitive therapy, and several others.

The idea that a “third wave” of CBT had arrived led to significant controversy³. The metaphor of a “wave” suggested to some that previous generations of work would be washed away, but that was not the intent and that was not the result. Waves hitting a shore assimilate and include previous waves – but they leave behind a changed shore. It seems to us that we are now in a position to begin to evaluate what will be left behind in a more permanent way from third wave CBT.

There is no doubt that several concepts and methods that have been central to third wave interventions (mindfulness methods; acceptance-based procedures; decentering; cognitive defusion; values; psychological flexibility processes) are now permanently part of the CBT tradition and indeed of evidence-based therapy more generally, in large part because evidence suggests that they are helpful⁴. These newer concepts and methods now largely co-exist side by side with previously established ones, with the dialectic between them serving as a useful spur to theoretical and technological investigation. In some cases, we now know that traditional CBT methods work in part by changing processes that became central after the arrival of third wave methods⁵. Third wave methods have been added to packages that include traditional behavioral and cognitive methods, resulting in useful approaches⁶. Research has begun to identify moderators indicating when older and newer methods work best with different populations⁷, suggesting that evidence-based practitioners can serve their clients by knowing methods from all of the CBT generations.

While new concepts and methods are important, in our opinion, there is a more profound set of changes that has been introduced by the third wave. A subtle but important change is that there is now greater recognition of the central importance of philosophical assumptions to methods of intervention and their analysis. Science requires pre-analytic assumptions about the nature of data, truth, and the questions of importance, and some of the differences between the waves and generations of CBT work were philosophical, not empirical. Recognizing this, the Inter-Organizational Task Force on Cognitive and Behavioral Psychology Doctoral Education⁸ recently concluded that all CBT training should place more emphasis on philosophy of science training, in the hope of increasing the coherence and progressivity of research programs.

An examination of assumptions leads naturally to a concern for theories, models, and processes. The third wave has been far less focused on protocols for syndromes, and more focused on evidence-based processes linked to evidence-based procedures^{8,9}. Increased emphasis on processes of change and their biobehavioral impact has meanwhile been strengthened by Research Domain Criteria¹⁰ and transdiagnostic models, among other trends. A notable result is that there is now much more focus on moderators and mediators of change, and the construction of intervention models that emphasize the role of changeable transdiagnostic processes (i.e., functionally important pathways of change that cut across various diagnostic categories).

In part because of its greater process focus, modern CBT and evidence-based therapy is more open to the investigation of a wider range of approaches from humanistic, existential, analytic, and spiritual traditions. This promises over time to reduce the dominance within intervention science of walled off schools of thought, or trademarked intervention protocols, and to bring different wings of the field together in an evidence-based search for coherent and powerful sets of change processes.

As a purely syndromal focus weakens and a process focus strengthens, human psychological prosperity and the thriving of whole persons, not merely psychopathology, is also becoming more central. Behavioral and mental health is ultimately about *health*, not solely the absence of disorders.

This set of changes is accelerating a transition in evidence-based care toward a process-based field that seeks to integrate the full range of psychosocial and contextual biological processes. Such a field is so broad that it stretches the very term CBT almost to a breaking point and we would not be surprised if that term soon wanes in importance.

Researchers and practitioners alike seem ready for a turn toward *process-based therapy (PBT)*, in which processes, procedures and their linkage are evidence-based, and are used to alleviate the problems and promote the prosperity of people. Similar to the trend toward personalized and precision medicine, focusing on changeable processes that can make a difference in

the behavioral and mental health of individuals provides a way for evidence-based care and person-centered care to merge under a single umbrella of process-based care. Orienting the field in that direction may ultimately be the most important “changed shore” produced by the third wave of CBT.

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The use of virtual reality in psychosis research and treatment

Recent years have witnessed a renewed interest and an increase in the popularity of virtual reality, the aim of which is to generate a virtual world that feels immersive and realistic. The user wears a head mounted display, and computer generated images and sounds are synchronized with his/her movements.

The potential of virtual reality for mental health research, assessment and treatment is that it enables researchers and clinicians to bring real-time life experiences into a lab environment. In standard practice, i.e. not in a virtual reality environment, the assessment of clinically relevant phenomena – such as neurocognitive processes, emotional reactions, physiological activation or behavioural responses – involves standardized questionnaires, semi-structured interviews about symptoms, doing computer tasks, watching videos or images, or role playing a situation while the physiological response is measured. Although the reliability and validity of these methods have been tested extensively, they lack ecological validity and do not represent the complexity of real life experiences¹.

The innovative potential of virtual reality is that it allows to measure real-time cognitive, emotional, physiological and behavioural responses to a variety of “real-life” situations, while enabling experimental control.

Till recently, the high cost of virtual reality equipment and software as well as cyber-sickness, a side effect associated with the older head mounted displays, have represented a major barrier to the implementation of virtual reality in standard practice. As head mounted displays have become popular devices for entertainment and gaming, they are increasingly affordable, so that implementation of virtual reality in daily clinical practice has come within reach.

Enthusiasm is growing among clinicians and researchers around the world about the potential that virtual reality offers to improve the assessment and treatment of mental and physical health problems. Fortunately, this technique has been around for over half a century and has been used in psychology research for well over 25 years². A significant body of research has also explored its use for the assessment and treatment of different mental health problems, ranging from phobias, to eating disorders, autism and post-traumatic stress disorder³.

A substantial number of studies have been conducted to establish the safety of using virtual reality with people experiencing psychosis and to elucidate the psychological mechanisms underlining the onset and maintenance of psychotic symptoms⁴. In this type of studies, participants enter a virtual environment, like public transport or a café, populated by avatars who show behaviours which can be interpreted as ambiguous, like for example looking at the participant and looking away. The occurrence of paranoid ideation or hallucinations triggered during the virtual reality experience is then assessed.

The use of virtual reality for the clinical assessment and treatment of psychosis is still in its infancy, but the first clinical trials have been published or are ongoing. In these studies participants either practice new social skills⁵, or are encouraged to drop their safety behaviours and explore new ways of approaching social situations^{6,7} or challenge the omnipotence of the voices they hear⁸. The initial results indicate that virtual reality assisted therapy can be a powerful tool to help people break the cycle of avoidance involved in the maintenance of symptoms and develop new skills and strategies to cope with them. They also show that improvements are maintained at follow-up.

Although the coming years are exciting times for the development and implementation of virtual reality for psychosis, our enthusiasm should not prevent us from considering safety and ethical concerns associated with this technique. Moreover, it is essential to emphasize that all research to date has evaluated the use of virtual reality as an adjunct to standard procedures with a therapist guide and not as a stand-alone intervention which patients can download and follow on their own.

Rigorous research is needed to confirm the initial positive findings regarding the use of virtual reality assisted assessment and therapy. To date most research in psychosis has focused on paranoia and hallucinations, and there is an urgent need to explore the use of virtual reality for negative symptoms. Future studies should integrate virtual reality with physiological measures (e.g., galvanic skin response, cortisol levels, heart rate) to better understand the mechanisms that trigger and maintain psychotic symptoms. Research endeavours should also inves-