Pilot Studies and Clinical Evaluations

Physiological Brain States: New to EBT and Advanced

The goal of the EBT Program is to raise the brain's set point. The set point is an indicator of physiological reserve (the protective capacity in organs and biological systems given at birth which tends to decrease over time) and allostatic load (the cumulative burden of chronic stress and life events.) In medicine, set point is the most reliable predictor of disease and death. Raising the brain's set point is a strategy for decreasing vulnerability to disease and improving quality of life.

Brain State and Set Point Impact All Domains of Life

Brain State	Physiology	Health	Thoughts	Feelings	Relationships	Behavior
1	Very Protective	Excellent	Abstract	Joyous	Intimate	Optimal
2	Protective	Good	Concrete	Balanced	Companionable	Healthy
3	Not Protective	Fair	Rigid	Mixed	Social	Moderate
4	Damaging	Poor	Reactive	Unbalanced	Detached/Needy	Unhealthy
5	Very Damaging	Very Poor	Irrational	Overwhelmed	Disengaged/Merged	Destructive

© 2021 Laurel Mellin, PhD

EBT is a foundational program for health as it is designed to decrease vulnerability to disease and death. Traditional medicine focuses on identifying and treating symptoms of a set point in stress, which is neither a brain-based strategy nor based in physiology. Treating symptoms rather than the root cause of problems, which is set point, has resulted in some improvements in health in the US. However, overall health and longevity have declined.

The purpose of EBT is to offer an actionable way for individuals to impact their physiological brain state and, over time, raise the brain's set point for decreased vulnerability to disease and premature death. The method draws upon neurophysiology and neuroplasticity as a new paradigm in healthcare: rewiring the stress response. Along the way to longer-term brain

rewiring, a momentary change in brain state can improve quality of life as it immediately, significantly, and meaningfully changes physiology, health, thoughts, feelings, relationships, and behavior.

The challenge in evaluating the impact of EBT is that the goals of this new paradigm are different from those of traditional healthcare. Recognizing that the intractability and recidivism seen in most health problems in developed nations are rooted in the set point, the "stress symptoms" become less important. Peter Sterling, PhD discovered allostasis, a physiological process that promotes chronic stress and reactivity. According to Sterling, regarding treating the stress symptoms with drugs, "our control systems, operationalized over billions of years were designed with multiple loops to allow for efficient trade-offs. These myriad compensatory mechanisms must be drugged as well."

This new view of health shifts attention away from the symptom to strengthening and relying on the brain and body's natural capacity for resilience. The purpose of EBT is to reframe health problems as symptoms of stress and empower individuals to switch off the stress response and rewire errant circuits. EBT becomes our foundational mechanism for health and well-being. What has been seen as ancillary becomes primary, and as we train the brain for optimal resilience and a high set point, we use traditional medicine to boost set point and resilience. Although medications and procedures are often needed to treat acute and chronic problems, no medication provides the chemical benefits of switching from a reactive circuit to a resilient circuit, much less the systemic impact of raising the set point.

By treating the brain rather than the symptom of brain stress overload, we have a greater chance of success in producing lasting, beneficial outcomes and improvement in overall quality and length of life. For example, obesity is an epidemic worldwide. It is a symptom of stress. As shown in the table above, all domains of life are impacted by set point. It is challenging to promote long-term success with weight loss because the underlying physiology, largely controlled by a dominance of stress-reactive circuits, has not been addressed. The strategies for obesity treatment are based on the old paradigm in healthcare. They have led to much suffering, including the failure of treatment programs, the overreliance on medications, the "over-pathologizing" of obesity, and the "comorbidities" in other domains of life that have gone untreated.

Applying the EBT paradigm, an obese individual learns that the problem is their set point, and the solution is to raise their set point to the homeostatic range, Brain State 1 or 2. Healthy eating, activity, and sleep and weight loss are challenging when the brain's set point is in stress overload. If they lose weight without changing their set point, they are at higher risk for weight

regain. The program is holistic and brain-based with the goal of not just lasting weight loss but an optimally resilient brain that promotes a set point in homeostasis, which confers a life of joy and purpose.

One of the challenges in evaluating the effectiveness of EBT is that any specific medical problem is not the target. Drawing upon the example of obesity, if a participant loses weight without rewiring the reactive circuits that drive it, recidivism is likely, and the weight regain causes a ripple of psychological and physiological stress that lowers physiological reserve and increases allostatic load. The short-term improvements can be deleterious.

Studies of the effectiveness of EBT are summarized on the method's website. The short-term benefits of EBT, the active change in physiological state, triggered responses, and protracted allostatic states, are important to conduct. An initial study was recently conducted. Several short-term studies of EBT (seven weeks) have shown immediate, significant improvements in health, which, if treatment is discontinued, are not sustained. A longer-term application of the method (a mean of 18 weeks of training) has shown promising long-term results. Part of the process of changing the set point is disrupting the set point in stress and adjusting to a new set point, both of which cause stress. Allostatic load changes and the long-term benefits of EBT are more challenging to assess.

In the delivery of The EBT Program, participants learn to evaluate their progress based on their set point. Repeated uses of the tools switches the brain state immediately, whereas the set point changes slowly. To target any stress symptom, such as overeating and anxiety, program participants learn how to rewire the reactive circuits that fuel it. To address trauma and the neural consequences of adverse childhood experiences, they use the EBT self-regulatory tools in advanced ways. The goal is to reconsolidate fear memories and reactive stress circuits.

Fortuitously, participants are rewarded immediately for using the tools, as in each switch to activate a resilient circuit they experience neural integration. Much like foreshadowing a high set point, they experience the chemical, electrical, and attendant emotional, behavioral, and cognitive benefits of that optimal set point. They learn that the goal of EBT is a set point in homeostasis, or optimally, Brain State 1, in which the resilience pathways in their brain are dominant and they have an abundance of the rewards of a purposeful life: sanctuary, authenticity, vibrancy, integrity, intimacy, spirituality, and freedom. The rise in set point is developmental.

Last, participants learn that stress is adaptive, that the brain is always updating its circuits to be in congruence with our changing reality. Updating emotional circuits requires stress-activation,

so optimal adaptation is not maintaining a Brain State 1, but emotional fluidity and flexibility, competence in experiencing all brain states without judgment, and using the EBT tools when stressed to update and strengthen their emotional architecture and resilience.

This preliminary report aimed to answer the question: do the resting brain states in the daily life of participants new to EBT differ from those who have completed training in the method? We hypothesized that if participation in the EBT program changes set point, then the resting set points of those who have completed this training would be more favorable than those new to EBT.

Methods
An EBT research consultant and a Certified EBT Provider recruited participants from members of the EBT online community who had completed at least four weekly remote group sessions in the method and participants who had completed a minimum of one year of training in the EBT program.

Participants were instructed on study protocols and brain state appraisal procedures of the manualized EBT 5-Point System. They appraised and recorded their current brain state prior to applying the self-regulatory tools and hourly 13 times per day for three consecutive days. The researchers calculated frequencies for each of the five brain states for the two groups.

Brain States of EBT Participants: New to EBT vs. Advanced

- All participants were members of EBT through the telehealth portal.
- Comparison of participants who had completed a four-week basic EBT course and at least four advanced courses.
- Participants appraised and recorded brain state hourly 13 times per day for three consecutive days.
- Total participant observations = 546
- N = 14   Advanced Training = 11   New to EBT = 3

Brain States of EBT Participants: New to EBT vs. Advanced
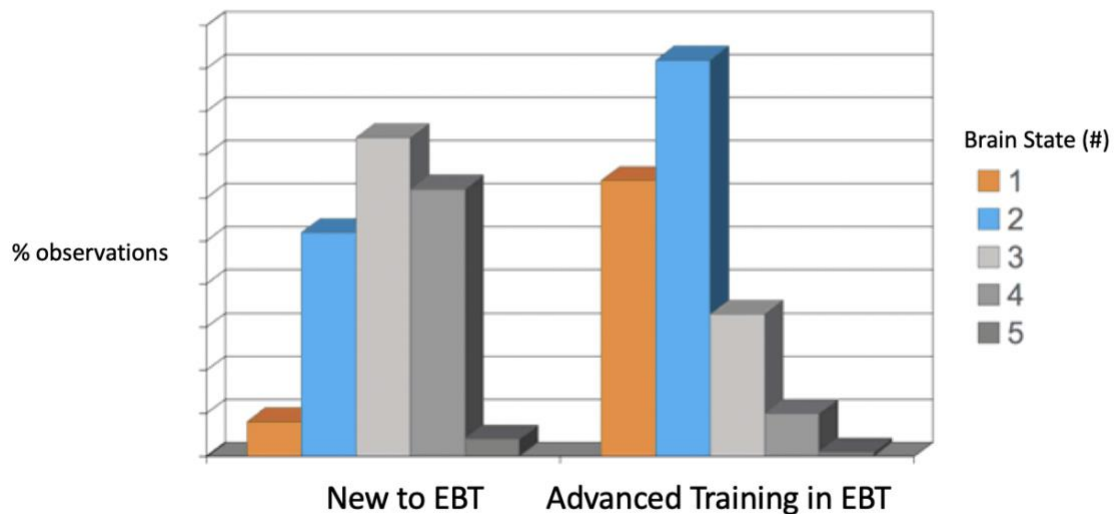
Physiological brain state ("brain state") prior to the use of self-regulation tools in participants who had completed introductory training only ("new") and at least four months of the EBT Program ("advanced").

Discussion

This preliminary study demonstrated the feasibility of collecting hourly brain state data for three days in this population. Brain State patterns differed between the two groups, with the advanced group showing more adaptive brain states.

The limitations of this study are substantial due to the small sample size and no random assignment. The differences observed may be attributable to factors other than the duration of EBT training. No reliabilities or validities to the self-reported brain states have been established. The design of future studies should include multiple measures associated with allostatic load and set point and use random assignment to control for other confounding factors.

Conclusions

Participants who were new to EBT reported brain state patterns that differed from those who had completed advanced training in the method. Additional studies are needed due to the methodical limitations of this study. This initial report of brain states is of interest in the trends observed, which are consistent with the method's goal, which is to improve the physiological brain states and set point of participants.