Outcome Report

Healing the Brain, Transforming Lives

The treatment model at Yellowbrick is comprehensive, integrated and derived from evidence-based research and decades of clinical experience. Yellowbrick recognizes the road to recovery and self-efficacy is through real-time relationships and experiences living and working together, within in a peer community. The work is difficult, requires courage and trust, but the results can be life altering and, in our daughter's case, life-saving.

Parent of Emerging Adult

YELLOWBRICK®

FIND **YOUR** WAY HOME®

"Yellowbrick, through individual therapy, group psychotherapy and just my general interactions with the community, gave me such an immensely rich understanding of myself. This understanding of who I am has led me to take control of my life and be the person I've always wanted to be.

Also, YB was not just for me, but for my family as well. I had family therapy here in a way that I've never had family therapy before. My parents and I were able to face some pretty difficult stuff and, as a result, the relationship with my family has never been stronger."

Yellowbrick Alumnus

Yellowbrick's Model

Yellowbrick's neurobiological model integrates leading edge findings from neuroscience, developmental psychology, research-based psychotherapies, and wellness medicine to heal complex, and often treatment-resistant, conditions in emerging adults. Findings from developmental neuroscience indicate that emerging adult brains are more neuroplastic and have the greatest potential for resilient and enduring change than at any other time since infancy. Research also validates the truth of the adage, "experience is the best teacher". The optimal conditions for brain healing and new learning require active engagement of those brain systems that are underdeveloped, disconnected, and deregulated to achieve true lasting improvement. That is why at Yellowbrick we have a dual synergistic model: **Healing the brain,** by improving its neuroplasticity, interconnections and self-regulation, while we **Transform lives** through building cognitive, emotional, relational and life skills in the real world, in real-time. It is only through mastering the everyday responsibilities of going to work or class, balancing a budget, managing healthy meals and an organized living space, developing realistic and fulfilling goals and plans, and navigating the ups and downs of relationships, that authentic competence and resilient self-worth is built. The synergism of neuro-modulation therapies with real-life mastery experience, and in-depth psychotherapies, within a supportive and accountable peer community, is what heals brains and transforms lives.

Importance of Outcome Research

There are a range of therapeutic approaches available for complex, refractory, often life-derailing and life-threatening, problems in emerging adults. How do we know what really works and what doesn't? It is quite challenging and expensive to evaluate real, observable improvement in such multifaceted conditions. Yet, without analyzing treatment outcomes, using well-established methods and procedures, we cannot assess the true efficacy of different interventions. That is why at Yellowbrick we invest professional expertise and resources to evaluate the objective effectiveness of our treatment model and methods. Most treatment programs don't evaluate objective outcomes at all and the few that do, utilize only global self-report scales. Often, these scales are not reliable or valid and are completed by the emerging adults themselves. Well-validated self-ratings can be one important source of information about outcomes but they are more subject to rater bias and provide an incomplete picture at best. As you will see, at Yellowbrick, we use some of the most advanced multimethod measures of treatment outcome that are currently available. These metrics are scientifically well-established and validated and reflect the same dual approach to healing the brain and transforming lives. **Yellowbrick is the only program in the nation that directly measures improvements in brain function over the course of treatment.**

Healing the Brain

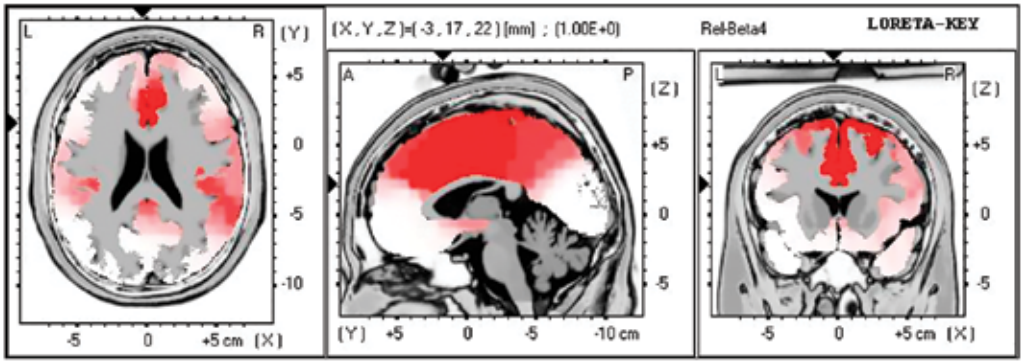
Improved Brain Function

Consistent with Yellowbrick's neurobiological model, everyone who comes to Yellowbrick receives a quantitative electroencephalogram or qEEG. The qEEG is a neuroimaging technique that records the electrophysiological activity in the brain, in real time. Brain signals are characterized in terms of absolute power and relative power in Hertz (Hz). An individual's recordings are compared to multiple databases, of normal and clinical populations, before and after treatment at Yellowbrick. These comparative analyses enable us to examine the underlying brain functions that correspond to their neuropsychiatric and neurobehavioral presentations, with greater neural specificity and treatment implications. For example, two individuals diagnosed with depression or anxiety may show very different patterns of functional brain deregulation. Results from the qEEG enable us to individualize and optimize the components of their treatment, which leads to better outcomes.

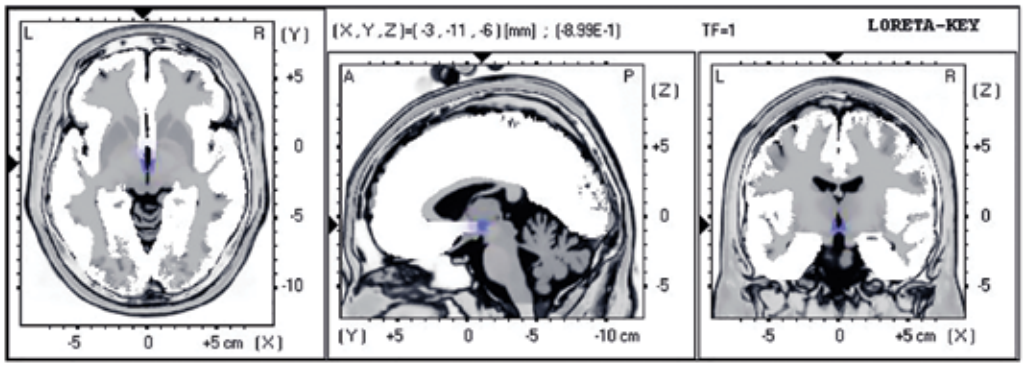
Our outcome research shows that treatment at Yellowbrick leads to improved brain self-regulation, flexibility and adaptability, as well as efficiency and interconnectedness, across brain networks. Specifically, we compared statistical analyses of qEEG data, for 88 individuals, when they began and completed treatment at Yellowbrick. These analyses revealed that the overall percentage of severe brain deregulation, defined as 2 or greater standard deviations from normal, decreased significantly over the course of treatment. Importantly, their percent deregulation improved significantly in both their prefrontal cortex ($p=.003$) as well as their anterior cingulate cortex ($p=.004$). In addition, their brains showed significantly improved connectivity across critical brain areas at discharge, as compared to the initial assessment ($p=.05$) Also importantly, both the right ($p=.002$) and the left ($p=.01$) prefrontal cortices, showed significant improvement in brain function at the completion of treatment. The right brain is widely accepted as the more "emotional" and "creative" brain; whereas the left hemisphere is considered the "thinking" and "rational" brain. Additionally, research has shown that negative emotions tend to be processed in the right hemisphere; whereas positive emotions are processed more in the left hemisphere. Yellowbrick's treatment model produces change across all these critical brain systems and functions.

The outcome results show that our treatment model is effectively targeting both the thinking, executive-functioning prefrontal cortex, and left hemisphere, as well as the more emotional and perceived threat processing and regulating functions of the anterior cingulate cortex and right hemisphere. These two areas, the prefrontal cortex and the anterior cingulate cortex, and their integrated connections, are critically important for all aspects of cognitive, emotional, and social functioning, across DSM diagnoses. These include: cognitive control of thought and action, behavioral execution based on internal goals and plans, reasoning and decision making, autobiographical and working memory (prefrontal cortex), as well as emotion processing and regulation, risk-reward decision-making, personality patterns, and fear and threat response systems (cingulate cortex). These findings are illustrated in the Loreta figures below for one patient showing a very significant decrease in deregulation of the anterior cingulate cortex from Assessment to Discharge.

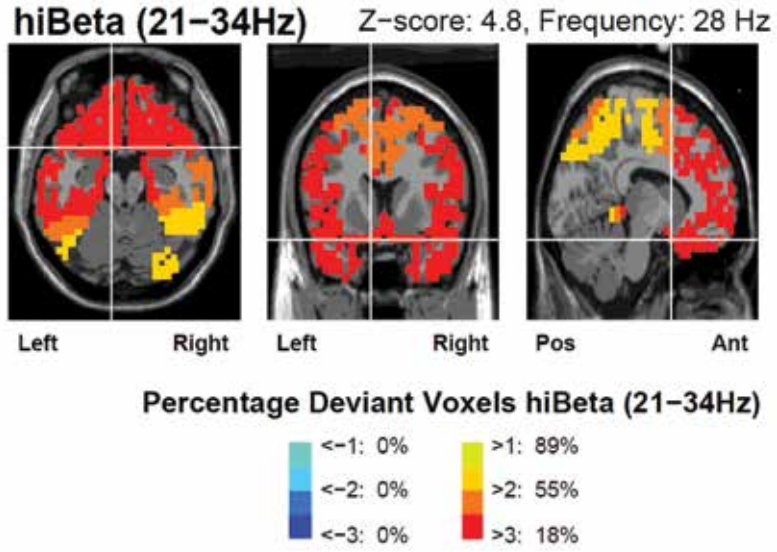
Anterior Cingulate Limbic Lobe at Assessment

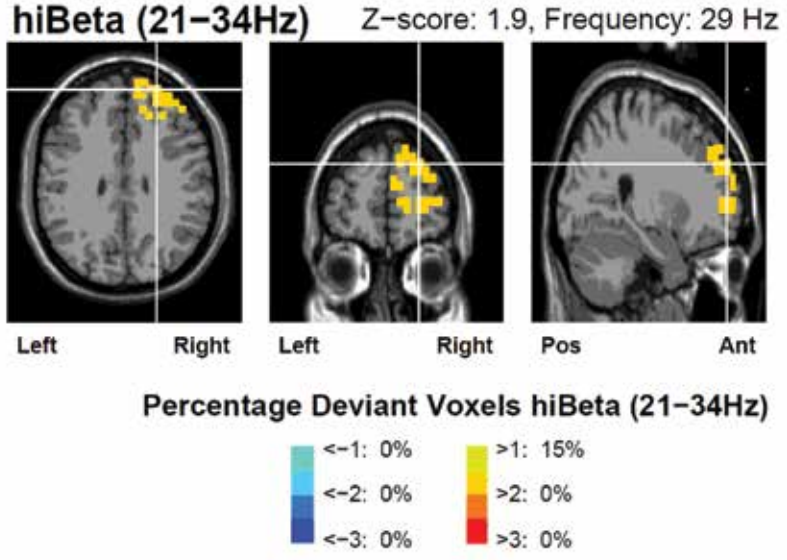


Anterior Cingulate Limbic Lobe at Discharge



Another leading edge finding from the Yellowbrick outcome research demonstrates substantial improvement in particular frequencies of brain signals in the High Beta ($p<.001$) and, especially, Gamma ($p<..0001$) bands. High Beta and Gamma frequencies are associated with emotion processing and integration. These high EEG frequencies in the frontal lobe, particularly the prefrontal cortex, are associated with top-down integration of emotional processes with executive functioning such as effective problem solving and risk-reward decision making. We refer to this developmental achievement as "cortical governance". These dramatic improvements in brain function are shown in the illustrations below. The top 3 images show a patient's percent deregulation in the High Beta frequencies at admission to Yellowbrick. The lower 3 images show the same patient's dramatic improvement in brain regulation at discharge. You can see how the severely deregulated red area is normalized over the course of treatment at Yellowbrick. All the qEEG findings were accepted for presentation at the Neuropsychoanalysis Association Congress in Israel, 2023.



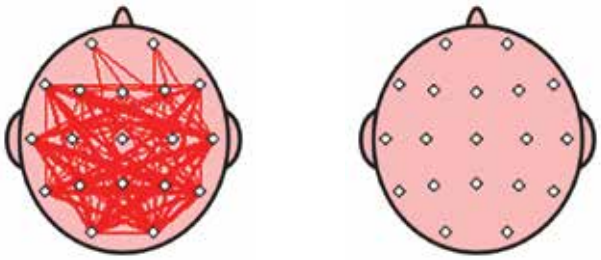


The clinical impact of such severe brain deregulation in the life of an emerging adult is often devastating and debilitating. The following illustrations show qEEG results for an emerging adult who presented with severe suicidal depression, anxiety and self-harm. The top illustration shows the qEEG before- (left panel) and after- (right panel) treatment for what is termed, "high beta hyper-coherence". This degree of high beta brain activity before treatment is most often associated with overwhelming anxiety, panic attacks, stress and worry. In this individual's case, the high beta activity was also hyper-coherent, which means the high-beta waves are interdependent across many different brain areas in an undifferentiated and inflexible pattern. This brain is "on fire" with anxiety and stress in a manner that prevents the emerging adult from responding effectively or adaptively. After treatment, however, this emerging adult's brain appeared totally normal and showed no excess of high beta or hyper-coherence whatsoever (right panel).

The second illustration shows hyper-coherence, but of theta activity, in the same emerging adult's brain (see left panel of bottom illustration). Theta brain waves are very slow waves reflecting a foggy or twilight state just before sleep. This emerging adult's brain before treatment was simultaneously hyper-anxious and almost asleep at the same time. These opposing mechanisms in the brain can reflect the brain's attempts to counterbalance or compensate for widespread and severe deregulation across numerous circuits and regions. In this neurophysiological state it would be extremely difficult to pay attention, learn, remember, set goals, solve problems, make decisions or relate to others effectively. By the end of treatment (see right panel of bottom illustration), this emerging adult's brain was normalized and he was able to complete cognitive, behavioral and interpersonal tasks quite effectively. Such profound changes in the brain's overall adaptive regulation and interconnection is associated with changes in most, if not all, areas of neuropsychiatric and neurobehavioral functioning.

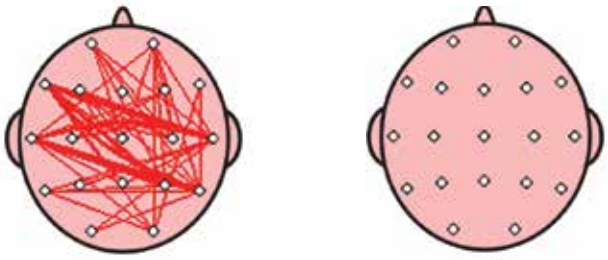
Hyper-Coherence

High Beta
(25.0-30.0 Hz)



Assessment **Discharge**

High Theta
(4.0-8.0 Hz)



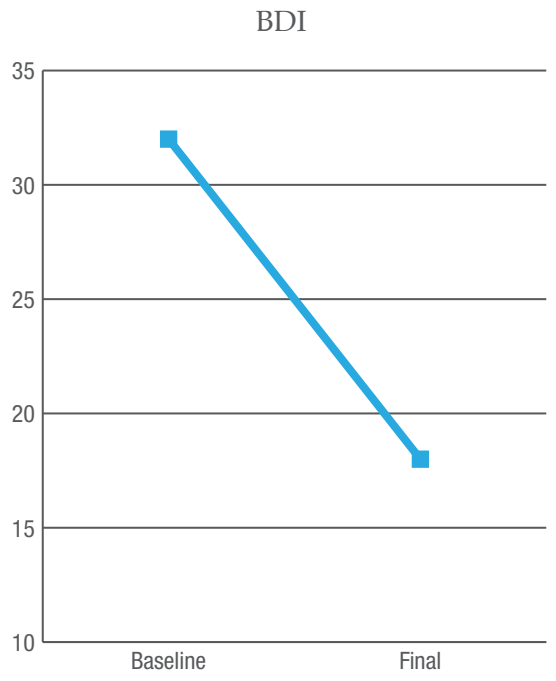
Assessment **Discharge**

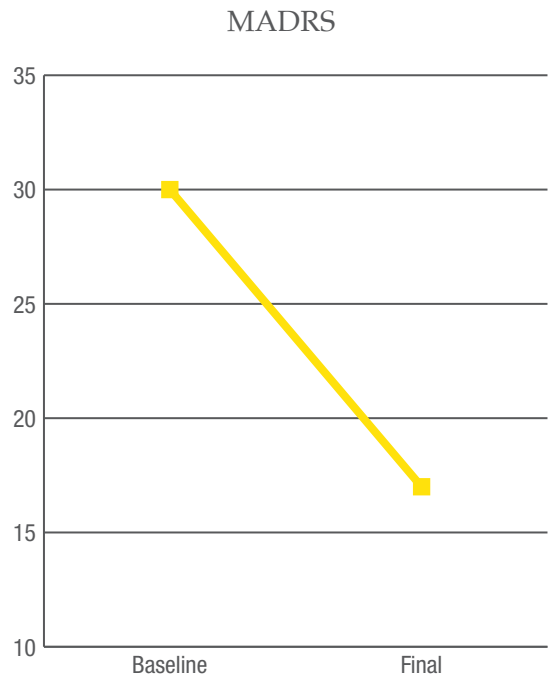
Deep Transcranial Magnetic Stimulation (dTMS)

Deep Transcranial magnetic stimulation ("dTMS") is a non-medication, non-invasive easily tolerated neuromodular therapy that is FDA approved for the treatment of Major Depressive Disorder and Obsessive Compulsive Disorder. DTMS treatment of depression, utilizing the Brainsway Deep TMS device, consists of the rapid induction of a small electromagnetic pulse in the dorsolateral prefrontal cortex. Stimulation of this area produces an electromagnetic flux that reregulates healthy brain function both in the limbic system, the "emotional brain", and the frontal lobes, the "thinking brain". Large-scale international research studies show that dTMS alleviates the symptoms of depression, with almost no adverse effects. Emerging adults at Yellowbrick with severe treatment-resistant depression can choose to receive dTMS in addition to the other treatment modalities available. New applications of dTMS are currently in FDA trials for use in this country including for substance abuse.

The findings for emerging adults who received dTMS at Yellowbrick are very encouraging, despite the fact that our population is much more severe than are research subjects and most other clinical populations. On the Beck Depression Inventory (BDI), Montgomery-Asberg Depression Rating Scale (MADRS), and the Patient Health Questionnaire-9 (PHQ-9), dTMS produced significantly decreased depression. Some of these findings are illustrated in the following graphs. Importantly, 58% of the patients reported a complete remission of depressive symptoms.

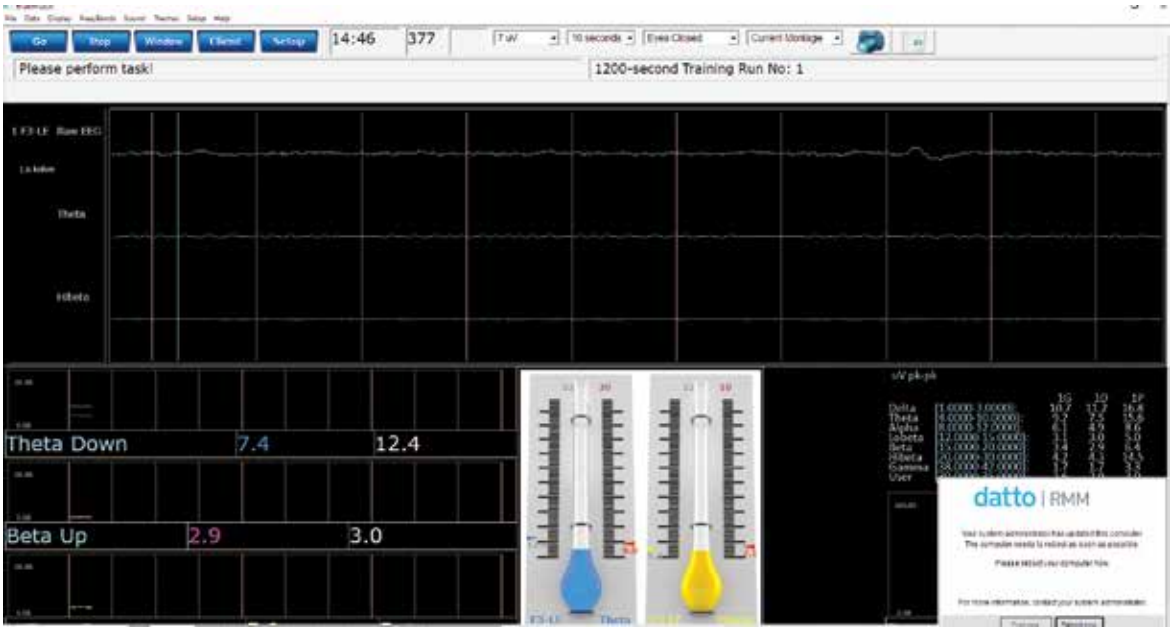
In keeping with our mission to advance neuroscience-based treatments, we have examined some of the mediating factors that may promote or prohibit optimal responses to dTMS and other forms of treatment at Yellowbrick. In a paper presented at the International Neuropsychiatric Association Conference in 2015, we found that emerging adults who had a deregulated cingulate cortex at admission, that is, greater than 2 standard deviations (SD) from normal, did not benefit from dTMS relative to those who had more normally regulated anterior cingulate cortices. The cingulate cortex is central to the cognitive-emotional processing that is disrupted in depression. These results have important implications for individualized treatment protocols, which incorporate patterns of brain regulation and deregulation to match optimal treatment modalities for each emerging adult.





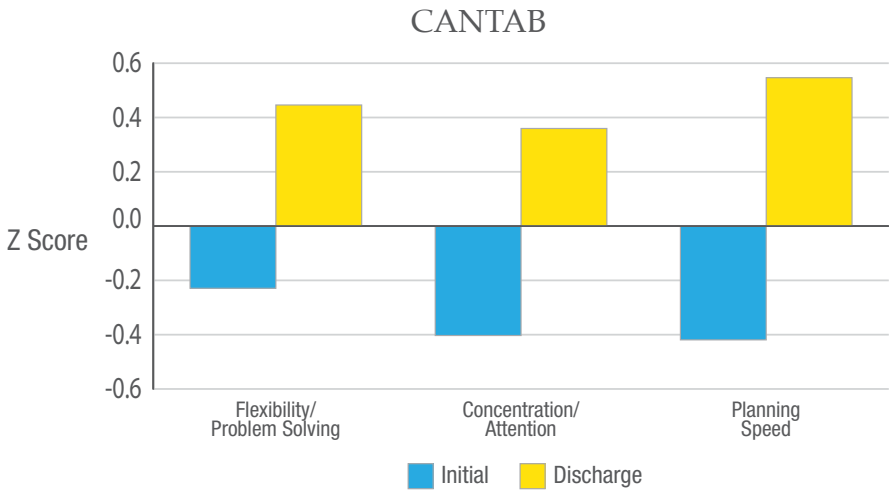
EEG-Neurofeedback

Surface encephalographic neurofeedback (EEG-NF) is a subtype of biofeedback training in which the individual learns to self-regulate brain signals in response to real-time visual and/or auditory feedback, usually from a computer screen. EEG-NF is offered to the emerging adults at Yellowbrick to help them with a range of problems from anxiety and sleep disorders to attention and concentration as well as depression and mood disorders, among others. The illustration below shows the training screen for an emerging adult who is learning to self-regulate brain signals associated with anxiety using software from Brainmaster Technologies.



Improved Cognition

Nearly all of the emerging adults who come to Yellowbrick have cognitive impairments in a range of critical domains including attention, information processing, memory, and executive functions such as problem solving, planning and decision-making. In fact, most of the emerging adults at Yellowbrick have cognitive impairments as significant as 2 or even 3 standard deviations below their normal peers. Improved cognition is an important focus of treatment at Yellowbrick. By the time they are ready for discharge, they improve significantly, and normalize, in nearly all of these crucial cognitive domains. Our outcome research, utilizing the well-established CANTAB computerized neuropsychological assessment system, showed that emerging adults at Yellowbrick improve significantly in sustained and flexible attention, information processing, planning, problem solving and decision making.

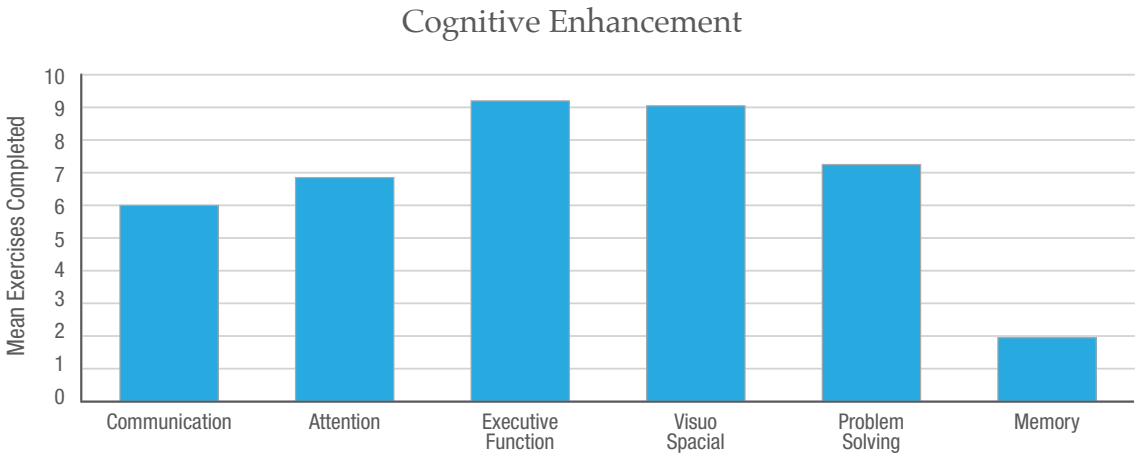


The following diagram of another emerging adult's brain illustrates the linkage between brain deregulation and cognitive impairment, before and after treatment at Yellowbrick. The areas of dark red and dark blue in the following illustrations are the most severely deregulated, 2 or 3 or more standard deviations from normal. The gray area is normal brain functioning. As you can see from the left panel of the diagram, before treatment, the anterior prefrontal cortex is covered with red and dark red, indicating that it is extremely deregulated and hyper-activated in the delta wave range. Delta brain waves occur when the normal brain is asleep yet this patient was awake! The anterior prefrontal cortex is responsible for many critical intellectual and integrative functions including planning, organization, executive functioning, working memory, abstract thinking, intentional behavior and affective regulation.

Assessment **Discharge**

This emerging adult's brain before treatment was essentially asleep while she attempted to function. In fact, her cognitive testing, using the computerized CANTAB assessment system, showed that her performance was more than 2 standard deviations below normal on multiple critical cognitive activities that are localized in the prefrontal cortex. These include executive functions, attention, memory, and risk-reward decision-making. At the end of treatment, her anterior prefrontal cortex was fully awake and functioning much more normally, as illustrated in the right panel of the diagram. Consistent with these brain changes, all but 1 of her CANTAB findings were within the normal range when she completed her treatment at Yellowbrick.

In addition to the brain-based and psychotherapeutic modalities of treatment, Yellowbrick also provides direct training in cognitive performance across these crucial domains using a computerized program. As the following graph illustrates, on average the participants completed and passed 60-90% of the skill sets in attention, executive function, visual spatial planning, problem solving and communication.



Genomic Analysis

Another area in which Yellowbrick is on the leading edge of neurobiological treatments is in customizing results from genomic analysis to individualize and optimize medication regimens. Pharmaco-genomic testing at Yellowbrick, using a saliva sample collected during each assessment, provides two critical types of clinical results: the genetics that influence three neurotransmitters that affect receptor and enzyme function in the brain for serotonin, norepinephrine and dopamine (i.e., pharmacodynamics) and the genetics of the biochemical pathways in the liver that are specific to the metabolism of psychiatric medications (i.e., pharmacokinetics). The three neurotransmitters targeted are essential to mood regulation and overall brain health. Nearly all of the Yellowbrick assessments show clinically significant genomic findings that directly influence the choice and level of medications we recommend. At Yellowbrick, we are also doing academic research to examine some of the potential ways in which certain genes may interact with life experiences to influence clinical outcomes. For example, we studied two polymorphisms of the SLC6A4 gene, which is known to be important in the cognitive-emotion regulation associated with either vulnerability or resilience to the life experience of trauma, substance abuse and several other serious clinical conditions. Our results showed that a greater percentage of patients with the so-called "s/s" genotype (over twice as many) developed clinical PTSD when exposed to trauma as compared to those with the "l/l" genotype. Furthermore, the patients with PTSD had greater deregulation of the prefrontal cortex on qEEG. The prefrontal cortex is thought to be a central locus of action of the SLC6A4 gene as well as a primary brain center for cognitive-emotion processing and regulation. These results suggest that we can potentially use genomic analysis to identify those individuals who are most vulnerable and to prevent, or intervene early and more effectively, in the development of certain clinical conditions. The following graphs illustrate these findings. They were first presented at the Clinical TMS Society's annual international conference in 2016 and 2020.

Presented at the Clinical TMS Society's Annual International Conference, November 2016

SLC6A4, COMT and Deregulation of the Prefrontal Cortex in PTSD

Laura Viner, Jesse Viner, Leah Klein, and Emily Rose Kirschenbaum

Yellowbrick Center for Clinical Neuroscience

Results

Chi-Square analyses showed that a significantly greater percent of patients with the SLC6A4 genotype s/s had PTSD, whereas l/l was greater in those who had trauma without PTSD ($p<.01$; see Figure 1). In fact, the s/s allele was more than twice as high as the l/l allele in those with PTSD (35.3% had s/s compared to 15.2% with l/l). Also consistent with impaired neurotransmitter function in the prefrontal cortex, a greater percentage of patients with PTSD showed at least 2 SD greater deregulation of the prefrontal cortex than did patients with trauma but no PTSD ($p<.01$). Nearly half of those with PTSD had a deregulated prefrontal cortex, as compared to close to a third of patients with trauma but no PTSD (see Figures 2 and 3). We did not find significant associations for the COMT polymorphisms met/met or val/val.

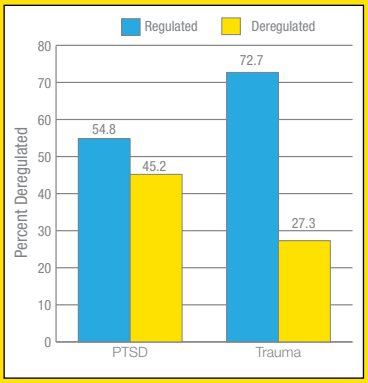


Figure 1.

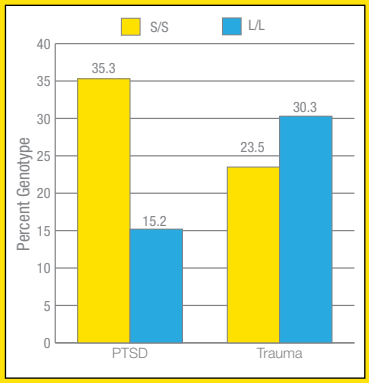


Figure 2.

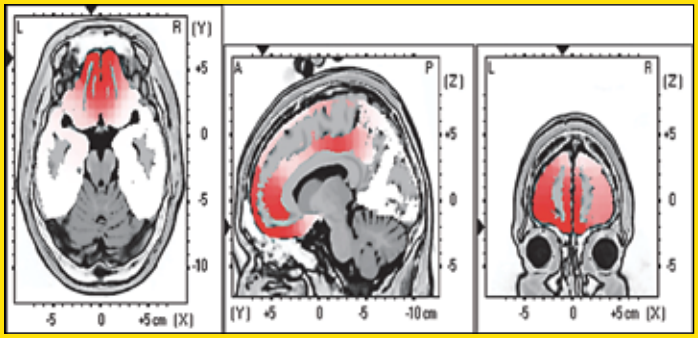


Figure 3.

"What struck me most about Yellowbrick's model was the emphasis put on peer relationships; these professionals recognized the importance of peers working together to create bonds, solve problems, and build toward a healthy emerging adulthood post-discharge. My belief that Yellowbrick's model, based on science, hard work, and integrity, is one I will carry forward with me into my professional work, and will support me in helping patients to discover a path forward into adulthood."

Yellowbrick Intern

Presented at the Clinical TMS Society's Annual International Conference September 2020.

Deep TMS for Obsessional Thinking: ACC Deregulation and Genomics as Possible Outcome Markers

Matthew Graller M.A., Laura Viner Ph.D., Jesse Viner M.D.
Yellowbrick Center for Clinical Neuroscience

Objectives

The purpose was twofold: 1) to examine whether TMS targeting the anterior cingulate cortex is beneficial in reducing severe obsessional thinking in complex patients and 2) to determine whether treatment response may be associated with a deregulated anterior cingulate cortex and/or certain genotypes.

Introduction

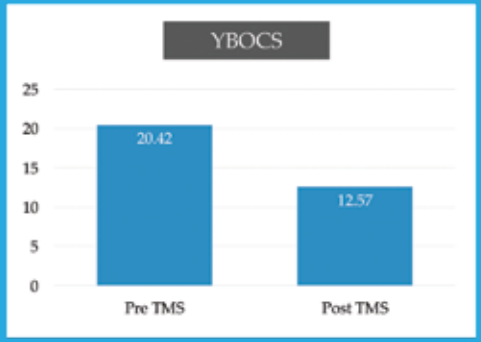
Evidence is accumulating in support of the use of TMS for the treatment of OCD (Berlim et al, 2013; Zangen, 2016). The anterior cingulate cortex (ACC) is the brain target of choice for OCD because it is central in the processing of negative emotions including fear and threat (Etkin, 2011; McGovern and Sheth, 2017), which is at the core of OCD symptoms. A TMS device that targets the ACC is a promising approach to this often treatment-resistant problem. At this point, it has not been established whether a deregulated ACC may, in actuality, be associated with more positive outcomes for TMS treatment targeting the ACC.

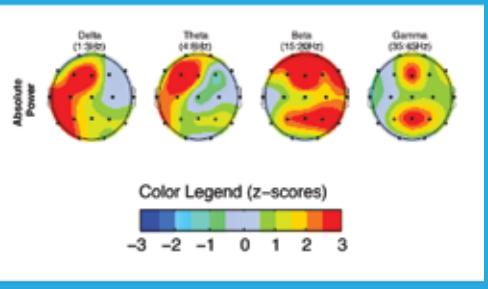
Method

A sample of 8 patients, 4 male and 4 female, aged 19-31, participated in the study. All 8 patients had severe obsessional thinking as determined independently by three senior psychiatrists. Baseline YBOCS, qEEG, and genomic analysis from Genomind were obtained at admission to treatment in an intensive outpatient facility. Patients underwent 29 DTMS treatments delivered over a 6-week period utilizing Brainsway's Deep TMS (dTMS) platform and the H7 helmet. YBOCS were measured weekly.

Results

All 8 patients achieved at least partial response to treatment. Five patients achieved full (>30% reduction on the YBOCS) and 3 showed a partial (>20% reduction) response to treatment. Two of the 8 achieved full remission (<10 final YBOCS score). Severe deregulation (> 2 SD) was found in delta, theta, and gamma bands at Fz (over the ACC) in 5 of 8 qEEGs. Eighty percent of patients who achieved a full response to treatment showed a severely deregulated ACC in the gamma band, in relative power. Also, for the 6 patients who had full genomic analyses, all shared the INS/INS genotype on ADRA2 and 5 of the 6 shared a MET/MET genotype on COMT.





Discussion

Our preliminary results support the use of dTMS, targeting the ACC, in the treatment of obsessional thinking. These findings also suggest that certain electroencephalographic and genomic markers may be associated with treatment response in OCD. The increased delta and theta frequencies found are associated with the perseverative nature of OCD while the increased gamma is associated with increased anxiety and worry. These findings mirror established qEEG patterns associated with OCD (Pacella 1944; Tot et al. 2002). The MET/MET genotype of COMT is linked with higher levels of dopamine in the prefrontal cortex associated with OCD (Sampaio et al. 2015). The ADRA2 genotype is associated with norepinephrine release and modulation and may be implicated in stress reactions in our severe cases (Cousijn et al. 2010).

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"We were desperate for answers and we got them at Yellowbrick! We decided on the 3 day Psycho-Neurobiological Assessment. Our son immediately felt heard and hopeful as his mental health issues were addressed and validated. Within treatment, we saw him change and return to the happy outgoing kid that he was before. We feel Yellowbrick's team saved his life and we are forever grateful. Two months later and he is thriving!"

Parents of Emerging Adult

Transforming Lives

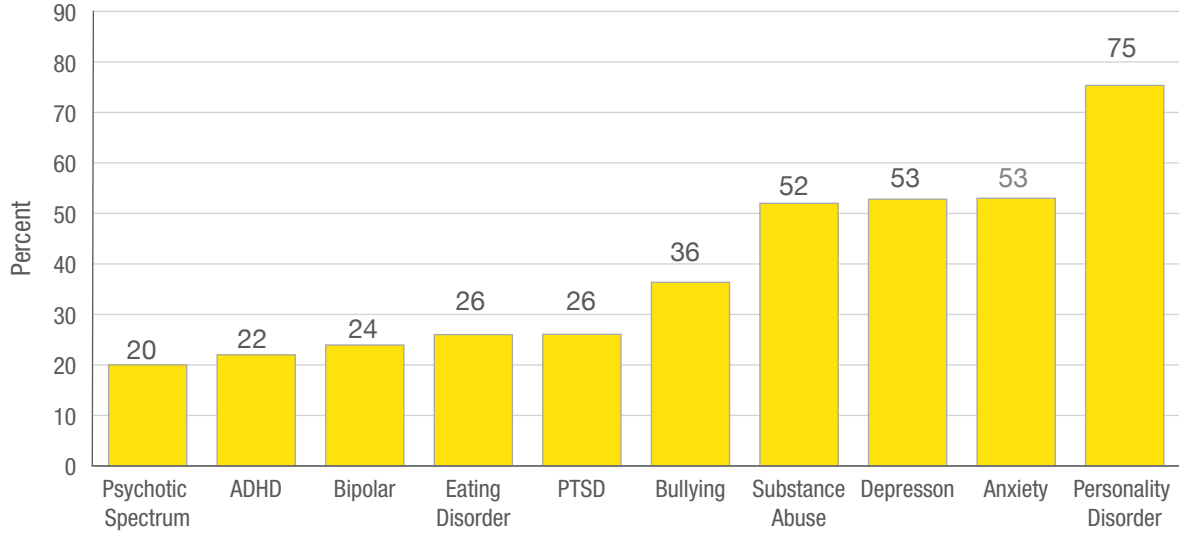
Yellowbrick's Population

Emerging Adults, age 18-30, come to Yellowbrick for intensive, multimodal treatment of the full range of neuropsychiatric disorders. Many of the emerging adults at Yellowbrick have mood and anxiety disorders, substance abuse, trauma, ADHD, and personality disorders, often in combination. Sixty-three percent of the emerging adults have experienced trauma and/or bullying and over 40% have attempted suicide before they come for assessment. Individuals are often referred from other treatment centers, from colleges, their families, or from their therapists and doctors at home who recognize that they need more intensive care. The graph below depicts the most common diagnoses among the emerging adults at Yellowbrick, based on formal research criteria from the Structured Clinical Interview for Diagnosis (SCID).

Yellowbrick's Length of Stay

The length of stay in the initial, most immersive phase of treatment at Yellowbrick is 12-16 weeks. This is when over 80% of the patients live in The Residence and participate in the full Partial Hospital Program. Most of the emerging adults then continue in the outpatient Minding the Brain Program for an additional 2-4 months to ensure deep and lasting improvement across the full range of neurobehavioral functioning.

Clinical Features of Emerging Adults at Yellowbrick



Yellowbrick is a wonderful, amazing place that has dramatically changed my life for the better. I've gone from being practically unable to emotionally read, much less connect with, other people, to being a dramatically more sensitive, and therefore more connected person. My relationship with my mother, which for almost two decades had been rocky at best, has done a complete 180. I have learned to grieve at Yellowbrick. I have learned to understand and connect with the feelings, thoughts, and emotive processes of others. I have learned, and perhaps more importantly come to accept, that the world is not black and white, and how to navigate the gray areas. And I am indescribably, irrevocably better off for it.

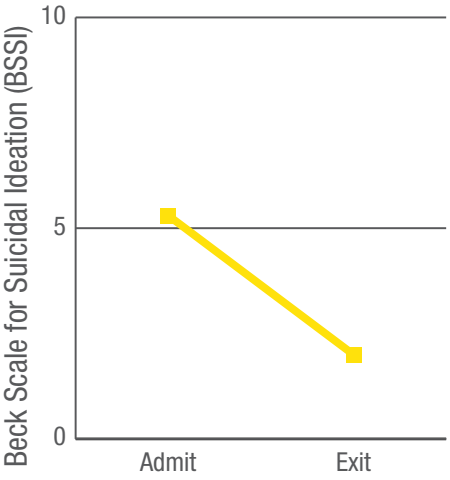
Emerging Adult

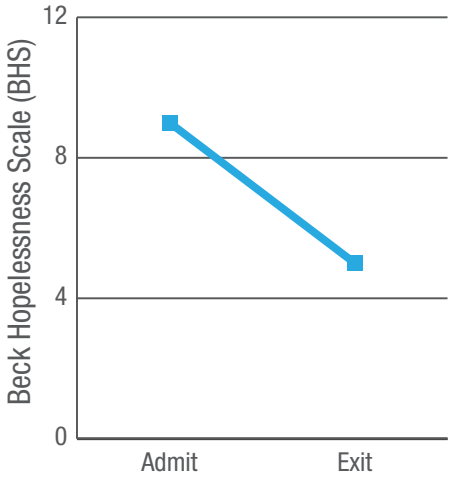
Improved Functioning

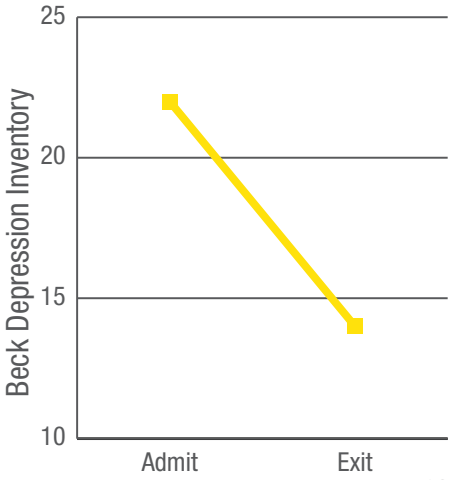
Our outcome research shows that emerging adults who complete at least the first 12 weeks of treatment at Yellowbrick improve significantly across a full range of presenting neuropsychiatric symptoms and behavioral problems. Most importantly, patients are no longer suicidal when they leave treatment at Yellowbrick. Findings from the Beck Scale for Suicidal Ideation indicated that patients are very significantly less suicidal at discharge ($p=.005$). They were also significantly less hopeless about themselves, their lives, and their futures on the Beck Hopelessness Scale ($p<.05$) than they were before starting treatment. Their depression also improved significantly on the Beck Depression Inventory ($p<.01$). These sets of findings are illustrated in the corresponding figures.

We also used the well-validated and -established Brief Symptom Inventory and Profile of Mood States (POMS) to evaluate changes in mood from Admission to Exit. As the graphs illustrate, patients improved significantly across most all areas of neuropsychiatric symptoms and mood states. Specifically, on the POMS, the emerging adults improved significantly in their Total Mood Disorder ($p=.0005$), Anger and Hostility ($p=.01$), Depression and Dejection ($p=.004$), Tension and Anxiety ($p=.003$), Fatigue and Inertia ($p=.001$) and Confusion and Bewilderment ($p=.002$). Interestingly, at 12 weeks, their Anger and Hostility was not yet significantly different from Admission but by their Exit, just weeks later, their Anger and Hostility had diminished significantly. Research informs us that residual hostility, especially self-directed, is a risk factor for future suicide.

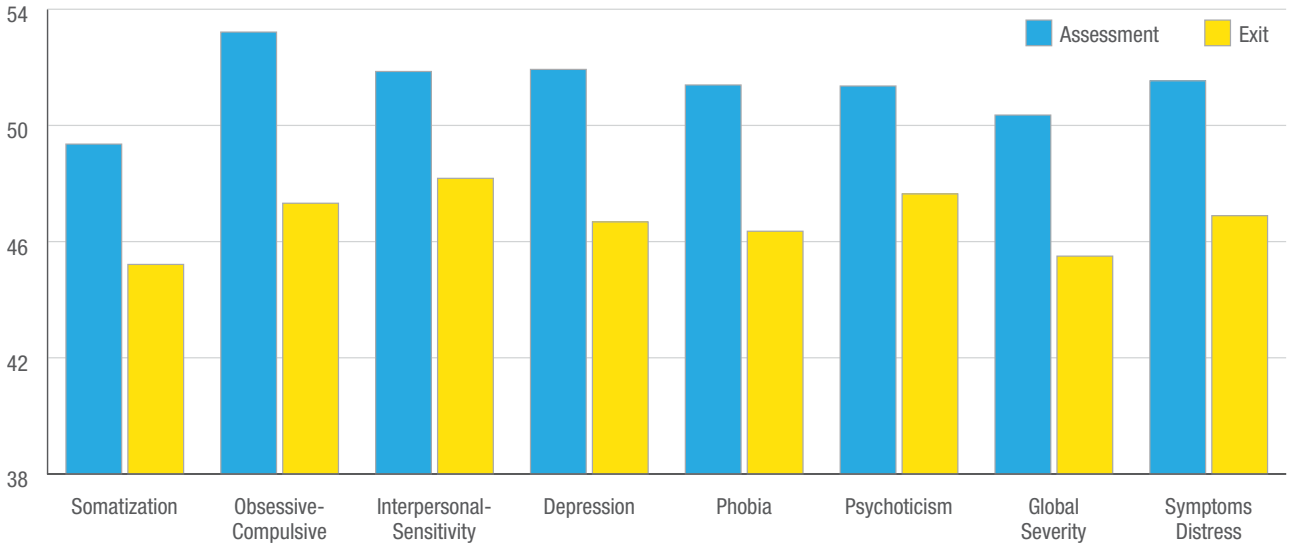
The emerging adults also improved significantly in their limbic system irritability over the course of treatment, as measured by the Limbic System Checklist-33 ($p<.05$). Limbic irritability includes sensory, affective, somatic, behavioral and memory processes associated with threat detection, emotion regulation, and anticipation of reward and punishment. This is often a central component of trauma and PTSD.



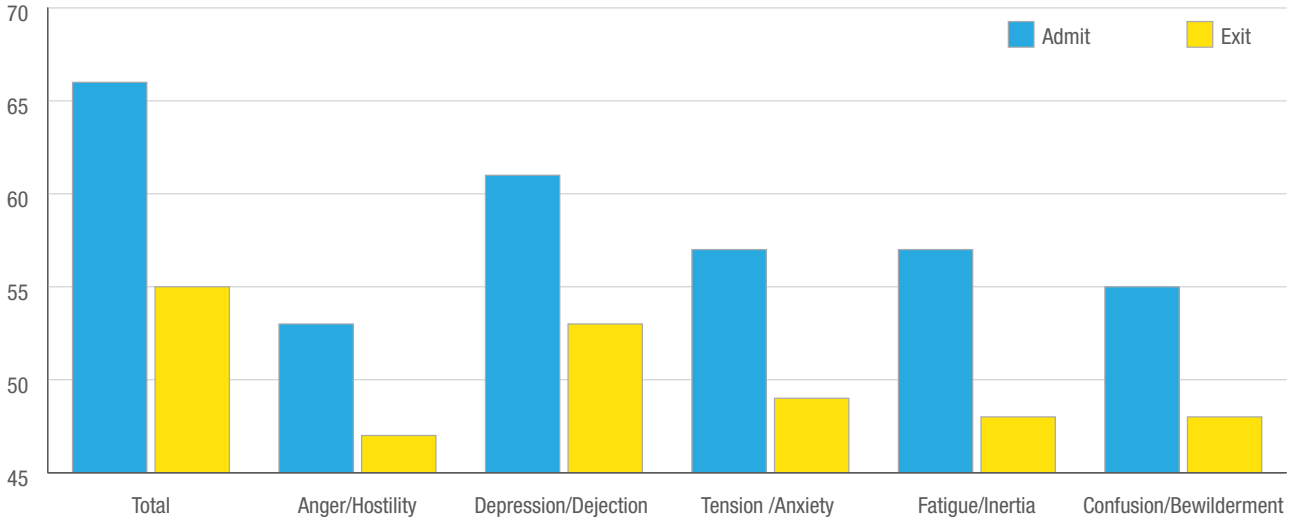




Brief Symptom Inventory (BSI)



Profile of Mood States (POMS)



"...Yellowbrick encouraged me and gave me the strength to get back in school. I didn't think I was ready, but you showed me otherwise and I am sitting here with my Bachelor's in Social Work and graduated Summa Cum Laude with a 4.0! Many times we don't know our strength until we take that first step, and I'm so glad Yellowbrick was there with me as I took my first step. All I can say is never give up! Several years ago, I was on the hospice route preparing to die and now I'm preparing to show others to fight for their life."

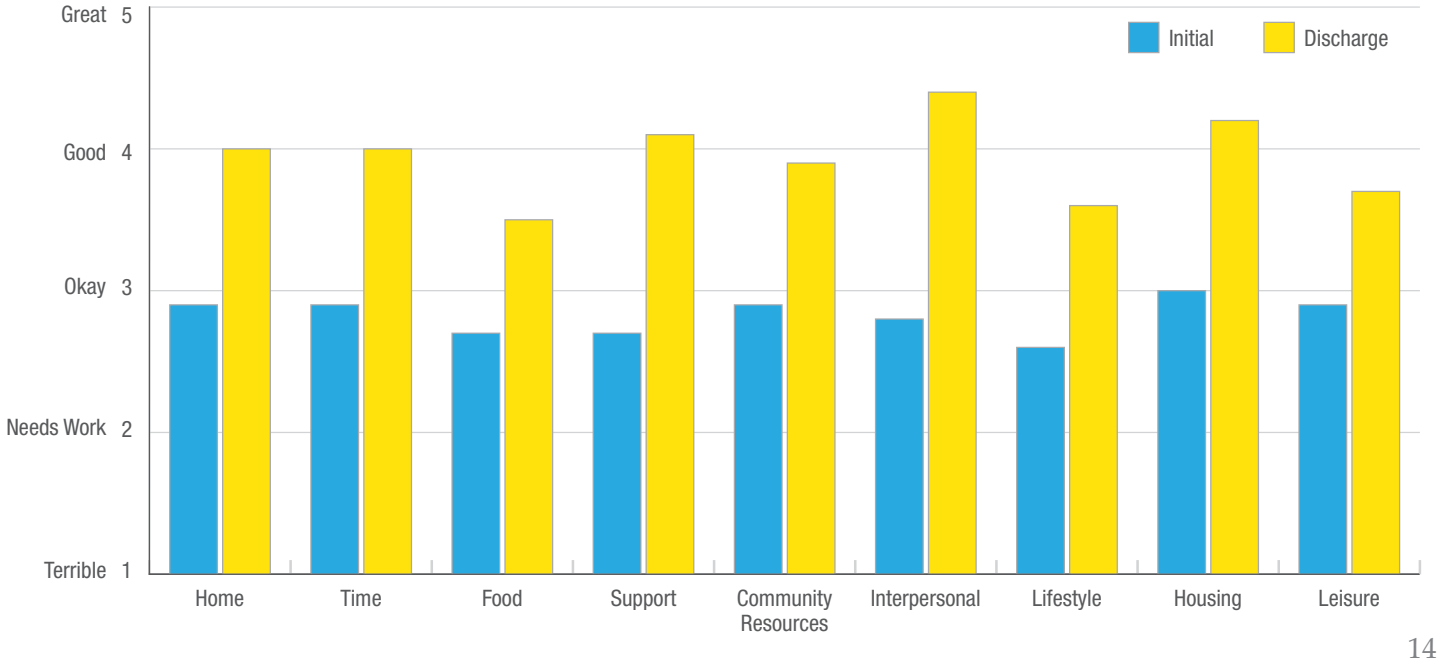
Emerging Adult

Improved Life Competence

It is not enough, however, to improve symptomatically and internally. Emerging adults must also be able to navigate all of life's real-world challenges and disappointments with competence and resilience. That is why at Yellowbrick we also emphasize building resilience and competence in all areas of the young adult's life. Our outcome research demonstrates that patients do, indeed, improve across all domains of life competence. Over the course of treatment, the Emerging Adults develop more adaptive coping skills such as planning, utilizing emotional support, and positive reframing ($p<.05$) as shown on the Brief COPE Scale. These adaptive skills replace the more maladaptive coping skills they began treatment with including behavioral disengagement, substance use, and self-blame ($p<.01$). Similarly, the Comprehensive Executive Function Inventory indicated that emerging adults at Yellowbrick also build more inhibitory self-control ($p<.05$) and emotion regulation skills ($p<.05$). These capacities are all essential for a capable and fulfilling life and form the basis of authentic self-worth.

Emerging adults who are discharged from Yellowbrick also improve significantly in other critical domains of life functioning. As illustrated in the following graph, 94% of Yellowbrick's patients become effective at management of their home, time, budget, transportation, and food and nutrition, as well as their ability to use supports and community resources. In addition, overcoming severe neuropsychiatric conditions, almost two thirds of the emerging adults at Yellowbrick actively work toward building their futures by attending college classes, working, or volunteering in a relevant field, while they are immersed in treatment. They also receive training in everything from study skills to time management to resume writing to help them succeed where they often failed before.

Life Skills Competence



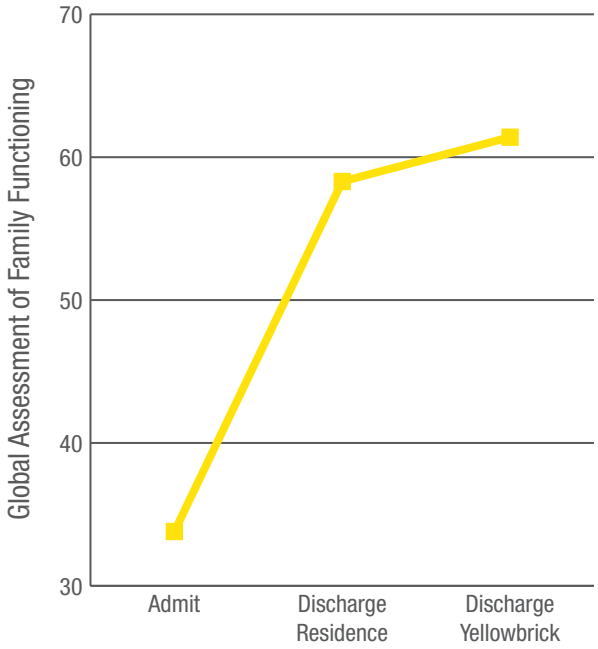
"It has been almost nine years since I walked through the doors of Yellowbrick. I can confidently say that without Yellowbrick, I would not be where I am today. Since completing the program at Yellowbrick, I graduated college, started a new career, went back for a graduate degree, found a loving partner, and have a full, rich life in which I feel happy, safe, and secure. Yellowbrick saved my life, and I will be forever grateful to everyone there."

Emerging Adult

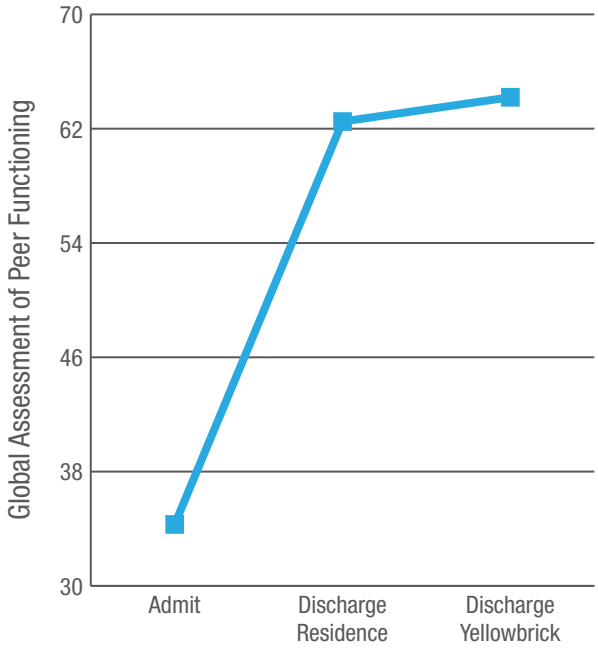
Improved Relationships

Multiple academic and public health studies demonstrate that relationships with family, peers, authorities and the broader community are essential to a meaningful and fulfilling life. Secure and supportive relationships are also the neurobiological foundation that facilitate improved neuroplasticity, brain growth and maturation. Healthy relationships are a primary focus at Yellowbrick and one in which emerging adults improve greatly. The graphs below depict improvements in the emerging adults' relationships with their families at admission, transition from the most intensive treatment phase of The Residence, and discharge from Yellowbrick. The second graph illustrates improvements in the emerging adults' relationships with peers at admission, transition from The Residence, and discharge from Yellowbrick.

Change in Global Assessment of Relationship Family Functioning

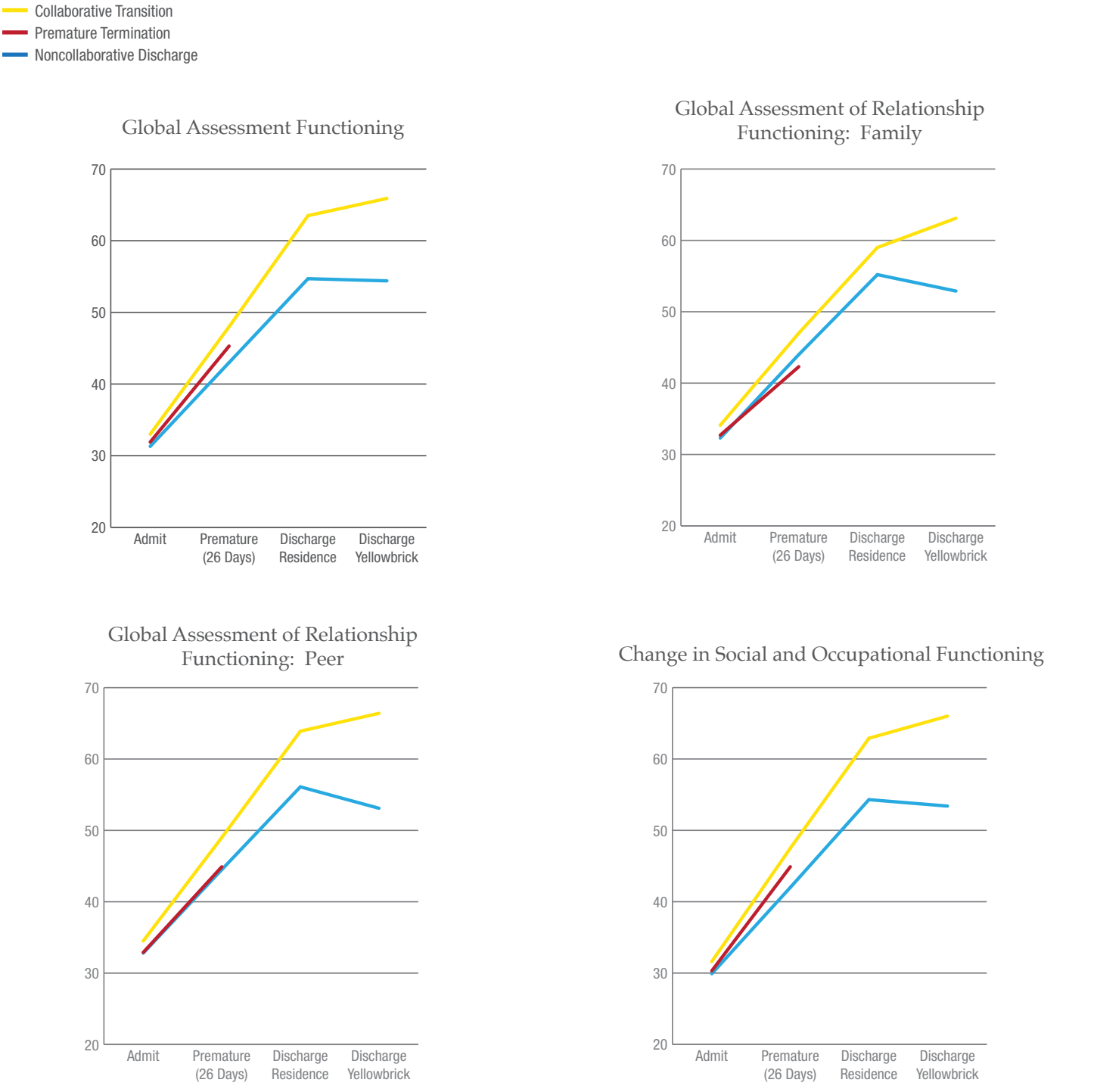


Change in Global Assessment of Relationship Peer Functioning



Collaborative and Noncollaborative Discharges

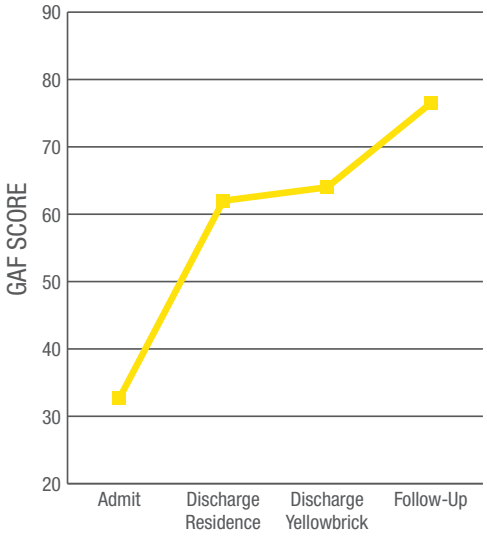
Not every emerging adult who completes treatment at Yellowbrick leaves in a fully collaborative manner. Sometimes they discharge before their progress is stable and they have built a life for themselves outside of treatment. It is important to us at Yellowbrick to understand whether there are different outcomes for emerging adults who complete treatment but leave in what we term a Noncollaborative Discharge as compared to a Collaborative Discharge. The following graphs show that it does, indeed, appear to make a significant difference, in terms of longer-term outcomes. The graphs illustrate that the two groups are quite comparable as they approach discharge from The Residence, which is the most intensive, immersive phase of treatment. However, by the time they are discharged from Yellowbrick several months later, the Noncollaborative group is showing a significant decline across all the domains of neuropsychiatric and psychosocial functioning.



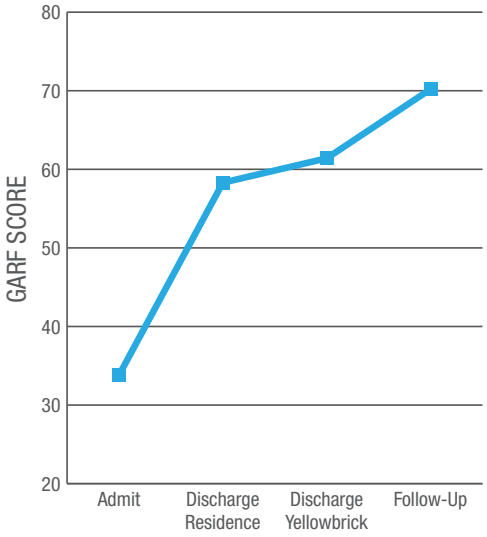
Long-Term Follow-Up

Emerging adults continue to maintain, and even increase, their gains from treatment at Yellowbrick long after they leave. As illustrated in the following 4 graphs from the Global Functioning Scales, treatment improvements continue and increase with time in their overall neuropsychiatric and life functioning. They also continue to improve in family and peer relationships as well as in social and occupational functioning. Nearly all of the emerging adults who completed treatment 2-4 years earlier were employed or going to college or technical school.

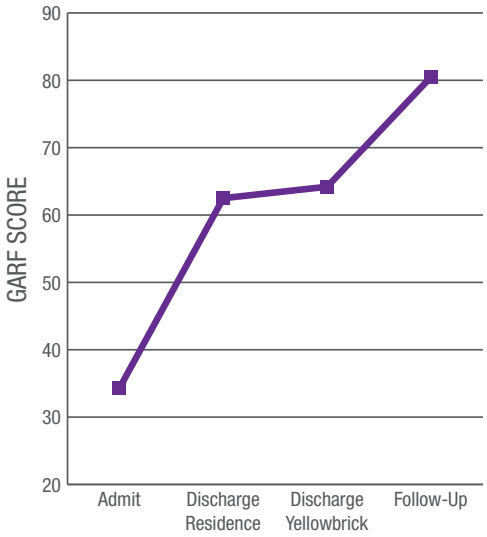
Follow-Up Overall Functioning



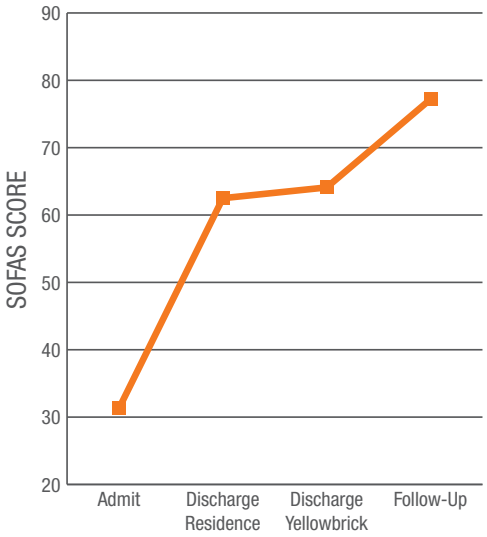
Follow-Up Family Relationships



Follow-Up Peer Relations



Follow-Up Occupational Functioning



"Now that I'm about to leave Yellowbrick, I have a lot of great opportunities lined up for myself and I'm excited to live the rest of my life, which is something I couldn't say before I started Yellowbrick. I'm also sad though that I will be leaving this community. I have developed some of the best relationships of my life with peers here. The staff is INCREDIBLE. They care so deeply about everyone at Yellowbrick and are truly committed to making the lives of myself and others change for the better."

Emerging Adult

Conclusions

Based upon our rigorous and leading-edge outcome research, Yellowbrick's integrative developmental neurobiological model produces powerful and lasting improvement in the emerging adults we treat. No other program utilizes brain-based measures like the qEEG or CANTAB or provides such powerful evidence of improvement across so many critical domains of emerging adult functioning. Our outcome research demonstrates robustly that there is hope for even the most complex and severe neuropsychiatric conditions of emerging adulthood. At a time of life when everything is at stake, emerging adults can learn to heal their brains and truly transform their lives.

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Healing the Brain, Transforming Lives®

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