



The Science of

**YELLOWBRICK<sup>®</sup>**

HEALING THE BRAIN, TRANSFORMING LIVES<sup>®</sup>





This paper is an effort by *Yellowbrick* to offer prospective emerging adults, their families, and professional referents the scientific basis for *Yellowbrick's* clinical model. Given the many myths and misconceptions about psychiatry, it is crucial in our experience that all stakeholders have an understanding of how we conceptualize mental illness and its treatment.

*Yellowbrick* is exceptional in having created a treatment center which has a coherent model based upon inter-disciplinary research, over a century of clinical wisdom, and the practice of *Yellowbrick's* own experienced clinician-scholars. The pillars of the model include:

- Organizational integrity, commitment to excellence, innovation and outcome value.
- Professional Staff directing and providing the treatment are senior, doctoral level and expert in their fields.
- Customized care and personal service.
- Immersion in an Open Therapeutic Community of sober, age-related peers engaged in *Real-Time Treatment* rather than an as-if institutional compliance.
- Prescriptive use of supportive, skills-based, educational, experiential and in-depth neuro-psychoanalytic psychotherapies (Ginot, 2015; Schore, 2019) delivered by experienced and expert doctoral level professional staff.
- Center for Clinical Neuroscience offering neuromodulation technologies including *dTMS*, neurofeedback and EMDR.
- *ReCognition* for cognitive restoration and enhancement.
- Mindfulness as a foundational neuromodulation practice & technology.
- Core Competence Home Health: executive functioning, life skills, education & career development.
- Multidimensional, developmentally attuned family model.

*Yellowbrick* has evolved its theoretical approach to assessment and treatment within the framework of developmental, interpersonal neurobiology. The model is founded on state-of-the art integration of current research and scholarship in the areas of evolutionary biology, neuroscience, developmental psychology, the full range of cognitive-behavioral & interpersonal (neuro-psychoanalytic) psychotherapies, and executive functioning/life-skills approaches in treatment.



The desired developmental outcomes of treatment with emerging adults are:

- Connected and coherent self
- Resilience and effective self-regulation of emotion and behavior
- Interpersonal effectiveness across a range of relationships; build a support system
- Resetting and maturation of motivation and reward systems
- Effective self-care & wellness, executive function and life-skills
- Renegotiate relationship with family; connected autonomy

(Arnett 2003, Schore 2012, Siegel 2012, Cozolino 2015)

Within this developmental framework, *Yellowbrick's* treatment enhances brain neuroplasticity, removing interferences to neural growth, and facilitating the normative developmental maturation of the brain, mind and spirit during the window of emerging adulthood (late teens to early 30's). In recognition of the vitally necessary foundation of nurturing relationships for neural and personal growth, all of *Yellowbrick's* clinical services occur in the context of an Open Setting Therapeutic Community. This means that relationships are mutual, collaborative and transparent rather than based on power, control or responsibility for others' choices. It is only under those conditions of interpersonal safety and separateness that authority can be located within the emerging adult and troubled parts of self will be willing to come forward.

*Yellowbrick* clinically operationalizes the power of research based neurobiological principles. Hope, which itself promotes neuroplasticity, is offered through explanation of the concepts of epigenesis and how adolescence through the third decade of life is a window of maturational opportunity due to enhanced neuroplasticity.



Hippocrates understood something crucial about neuroplasticity over two millennia ago;

*“That which is used - develops;  
that which is not - wastes away”.*

*Yellowbrick* embraces this principle by offering repetitive experiences for learning and practicing of new skills and adaptive patterns in situ while living in the community. *ReCognition* is *Yellowbrick’s* brain gym utilizing neuropsychologist developed video games for enhancing neural growth in the network centers responsible for attention, concentration, working memory, problem solving, and processing speed. Most importantly, peers & staff as a Community encourage persistence and the taking of supported risks, both of which promote new neural networking.

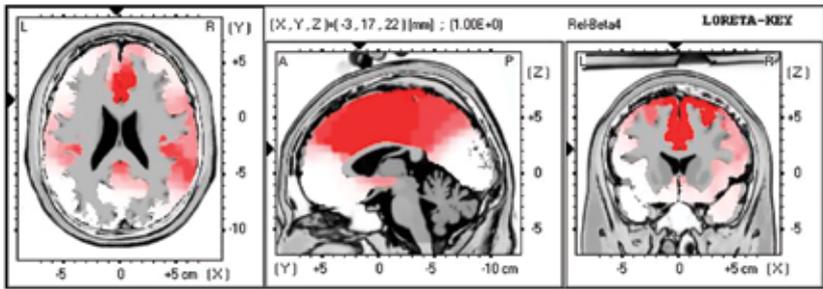


Donald Hebb in 1948 introduced the principle of;

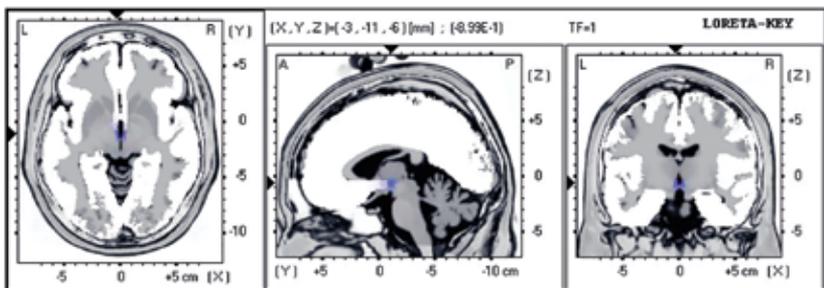
*“what fires together wires together”;  
“any two cells or systems of cells that are repeatedly active at the same time will tend to become ‘associated’ so that activity in one facilitates activity in the other”.*

This principle creates challenges as patients often have developed associative pathways which maladaptively link networks. Sexual arousal links with objectification and aggression from repeated viewing of pornography. Vitality and well-being can only be experienced with substances. Power and connection to others becomes associated exclusively with video game prowess. *Yellowbrick* works to undermine these destructive pathways, through sobriety and Exposure and Response Prevention and create new pathways via experiences of attuned connectedness, authentic intimacy and competence.

## Anterior Cingulate Limbic Lobe at Assessment



## Anterior Cingulate Limbic Lobe at Discharge



These illustrations are of a sample patient's Frontal Lobe at the Assessment then again at Discharge, and the Anterior Cingulate Cortex at the Assessment then at Discharge. The red areas indicate severe deregulation; the gray areas are normal.

A fundamental evidence-based premise of *Yellowbrick's* model is that acute and/or complex psychiatric patients live in a state of brain dysregulation which defaults to automatic symptomatic and behavioral systems and thereby negatively reinforce the dysregulation (Biven, 2012; Panksepp, and Solms, 2018). The preponderance of treatment programs attempt to intervene with what are essentially learning and coping skill strategies at a time when the brain is too dysregulated to be fully receptive to these approaches. Medication alone is an insufficient neuromodulation effort in complex conditions because the automatic, default behaviors continue to undermine brain regulation and medication impact is often incomplete and often takes weeks to months to have full effect.

*Yellowbrick's* model initially prioritizes facilitating brain regulation as a precondition for introducing activating emotional learning. For those whom this approach remains insufficient, not just incomplete, a deeper neuro-psychoanalytic psychotherapy approach is required to bring the self-regulating power of the attachment systems further into the process.

## Proposed Phases of a 6 Month Treatment Plan

|   | SUNDAY   | MONDAY | TUESDAY | WEDNESDAY | THURSDAY | FRIDAY | SATURDAY |
|---|--|--------|---------|-----------|----------|--------|----------|
| MONTH 1   | <b>Neuromodulation-Minding the Brain</b>   |        |         |           |          |        |          |
|   | 8-12 weeks to regulate their brain, restrain from defeating behavioral patterns and practice new adaptive actions, establish sustaining collaborative connections with staff, peers and parents, and initiate actions consistent with values, interests and ambitions. |        |         |           |          |        |          |
| MONTH 2   |  |        |         |           |          |        |          |
|   | ↓  |        |         |           |          |        |          |
| MONTH 3   | Transition from The Residence to an apartment in Evanston supported by home visits.  |        |         |           |          |        |          |
|   | 4-week period of continued full-time programming.  |        |         |           |          |        |          |
| MONTH 4   |  |        |         |           |          |        |          |
|   | ↓  |        |         |           |          |        |          |
| MONTH 4   | <b>Self &amp; Skill Consolidation</b>  |        |         |           |          |        |          |
|   | 8-10 week extended period of Life Strategies IOP at a customized lower level of intensity.   |        |         |           |          |        |          |
| MONTH 5   |  |        |         |           |          |        |          |
|   | ↓  |        |         |           |          |        |          |
| MONTH 6   | <b>Community Integration</b>   |        |         |           |          |        |          |
|   | Individual and family work along with executive function and life-skill support while living in the community.   |        |         |           |          |        |          |
| Following transition from active treatment, Alumni in Good Standing are eligible for Tuesday and Friday night Community dinners, and Parents as Partners Sunday brunches with the Yellowbrick Community at no charge. |  |        |         |           |          |        |          |

*Yellowbrick* appreciates the level of personal and financial commitment required of families to secure world class care and personalized customer service. Treatment at *Yellowbrick* is customized. Individuals whose psychiatric condition has persisted for several years and/or created safety risks and/or a period of incapacity to function within a developmental continuum have better outcomes with a more extended support platform and continued intensive treatment at varying levels of care to sustain an enduring recovery (deMaat, 2009; Shedler, 2010, 2018; Webart, 2012). While there is no minimum or maximum length of stay, *Yellowbrick* has created a flexible 6-month treatment model which has three phases:

- a. Neuromodulation-Minding the Brain
- b. Self & Skill Consolidation
- c. Community Integration

*Yellowbrick's* experience is that most individuals require a minimum of 8-12 weeks to regulate their brain, restrain from defeating behavioral patterns and practice new adaptive actions, establish sustaining collaborative connections with staff, peers and parents, and initiate actions consistent with values, interests and ambitions. *Yellowbrick's* most intensive PHP level of care is therefore organized around a 12-week neuromodulation curriculum. Transition from The Residence to an apartment in Evanston supported by home visits often occurs successfully at the close of the *Neuromodulation Phase* of care.

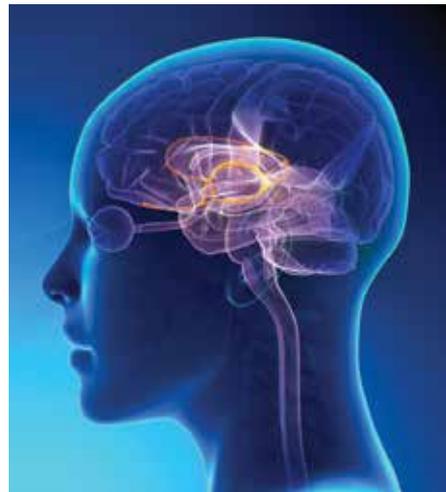
*Yellowbrick* recommends for most individuals that there be a 4-week period of continued full-time programming following the *Neuromodulation Phase* with a shift to the full Life Strategies program within the *Self & Skill Consolidation Phase*. The next phase of treatment is an individualized 4-8 week extended period of Life Strategies IOP at a customized lower level of intensity. The last 4 week *Community Integration* segment of treatment involves individual and family therapy along with executive function and life-skill support while living in the community. Following transition from active treatment, Alumni in Good Standing are eligible for Tuesday and Friday night Community dinners, and Parents as Partners Sunday brunches with the *Yellowbrick* Community at no charge.



*Yellowbrick's* developmental, interpersonal neurobiological model is designed to calm the threat response (limbic) system, and thereby open receptivity to techniques for increasing cortical governance resulting in new learning and emotional growth. The model also facilitates the natural maturation of those brain systems which are coming “on-line” in the developmental window from age 16 into the young 30's (Giedd, 2012; Schore, 2017; Siegel, 1999). *Yellowbrick's* intensive treatment program targets four dimensions of brain functioning necessary for disrupting maladaptive automatic default systems and behavioral patterns.

### 1. Resetting the threat response (limbic) system.

Complex psychiatric conditions, often arising out of cumulative stress or trauma, derail the functioning of the limbic system such that ordinary life creates ongoing anticipation of or actual re-experiencing of threats to physical and emotional safety. Individuals are in continual fight/flight (hyper) mode or have succumbed to a detached, dissociative state (hypo) of being shut down. *Yellowbrick* employs multiple evidence and research-based technologies to address these states of hyper/hypo arousal.



These technologies include:

- a. Neurofeedback
- b. *Deep* Transcranial Magnetic Stimulation (Brainsway)
- c. Direct Transcranial Stimulation (Alpha-Stim)
- d. Mindfulness embedded within the *Yellowbrick* culture
- e. DBT embedded within the *Yellowbrick* culture
- f. Mentalization (Fonagy, 2010) embedded within the *Yellowbrick* culture
- g. Somato-sensorimotor psychotherapy (Ogden, 2017) mind-body, drama and movement therapies
- h. EMDR
- i. Prescriptive exercise
- j. Support for sobriety & restraint from compulsive behavior patterns
- k. CBT for insomnia

## 2. Increasing Cortical Governance

*Yellowbrick's* assessment procedures using quantitative EEG and cognitive testing (CANTAB) dramatically demonstrate the derailing of cortical governance in complex psychiatric conditions. The latest research puts particular emphasis on the role of impaired cognitive functioning leading to poor response to treatment with subsequent chronicity and disability. *Yellowbrick* employs multiple evidence and research-based technologies to support the return of cognitive functioning while also not reactivating traumatic experiences early in the treatment. These technologies include:

- a. *ReCognition*; a brain gym using video games that target core cognitive functions such as attention, working memory, planning, problem solving and processing speed
- b. Neurofeedback protocols prescribed by national expert
- c. *Deep* Transcranial Magnetic Stimulation (Brainsway)
- d. Sleep hygiene (CBTI)
- e. Nutritional planning
- f. Dialectical Behavioral Therapy (DBT)
- g. Acceptance and Commitment Therapy (ACT)

- h. Cognitive Behavior Therapy (CBT)
- i. Education about the brain in health and illness
- j. Reintegration into college, work or community service while in treatment

### 3. Re-networking the reward/motivation system

Trauma, repetitive disappointments and frustrations, persistent suffering, and the insidious impact of the maladaptive automatic default compulsive behavior patterns, derail or hijack the healthy reward and decision-making systems. This demoralizes the young person and undermines the natural rewards from daily life satisfactions, or it kidnaps the reward system such that only highly overstimulating, novel pursuits like substance abuse bring any sense of vitality and relief of well-being (Bloom 2013). Having discussed this issue with multiple international clinician-scholars (Ginot, 2015; Ogden, 2015; Schore, 2019; Solms, 2019; van der Kolk, 2014), this is one of the most difficult challenges in our field; how to transform motivation from dopamine to oxytocin mediation.

For this reason, *Yellowbrick* employs multiple evidence and research-based technologies to restore motivation including:

- a. Facilitating experiences of competence (van der Kolk, 2017)
- b. Eliciting authenticity over compliance
- c. Relationally co-created experiences of joy (Davidson, Ogden, Panksepp)
- d. Connection to Community
- e. Connection to education, career, community service
- f. Spirituality; facilitating a vision for a life that matters
- g. Interrupting compulsive behaviors with satisfying alternatives
- h. Connecting to and savoring one's physical, sensory experience through mindfulness (Garland, 2013)
- i. Nutraceutical supplementation (Bloom, 2013)
- j. Relief from depression, anxiety and trauma symptoms
- k. Psychotherapy which restores hope through self-integration (Frank, 1973)

1. Expert family therapy to promote connected autonomy (i.e., supportive connections with family that facilitate healthy independence and growth)

#### 4. Facilitating Secure Attachment

Since the paradigm changing work of John Bowlby (1993), which was dramatically validated by the Romanian orphan studies, it has been increasingly evident that all human growth and development requires secure, safe and nourishing attachments. It has now been replicated by neuroimaging studies demonstrating that effective psychotherapy enhances neuroplasticity. Neuroplasticity is the molecular engine for creating new synapses which are the structural architecture of learning, healing and growth. In addition to cortical governance, attachments are the fundamental vehicle for effectively addressing emotional distress.

For the less troubled among us who seek mental health care, supportive and cognitive psychotherapy approaches activate latent potentials for secure attachment which had been suppressed during times of significant stress. In contrast, complex psychiatric conditions are embedded within persons whose attachment patterns and development have been arrested, derailed and distorted by trauma, illness, chronicity, the resultant distortion of family and community support systems, and the malignant consequences to one's personhood from persistently living in terror, helpless despair or pain. For these individuals, relationships become threats or at best barely useable for the emotional nutrients of emotional healing and growth. Tragically, relationships often become weapons of re-traumatization.

*Yellowbrick's* experience is that for those individuals who have experienced a significant psychiatric occurrence (ex: singular trauma, onset of psychosis, major depression or mania, suicide attempt, etc.) but whose self-development has achieved some degree of secure attachment, transition to office outpatient care with enduring outcome and functioning can be achieved within the 8-12 week curriculum of care of *Yellowbrick's* Neuromodulation Intensive Treatment Program. For those with complex psychiatric disorders and severe personality disorders who need a more in-depth neuro-psychoanalytic psychotherapy approach (Cozolino, 2017; Ginot, 2015; Schore, 2012), length of stay in the most intensive levels of care averages 3-4 months and optimally extends at lower levels of care for another 4-8 months.



*Yellowbrick's* Open Therapeutic Community model (Muller, 2006) is the optimal platform for both supportive and in-depth psychotherapy. In contrast to traditional settings which operate on the basis of authority, power and subtle iatrogenic coercion, the Open Setting emphasizes transparency and collaborative relationships as the basis for safety and individual responsibility. This allows the deeper parts of the troubled self to come forward rather than hide in the face of others' power. *Yellowbrick* has 14 years of outcome data demonstrating the value of this model (L. Viner, 2019).

*Yellowbrick's* services are offered to enable customization of level of care spanning residential to home health visits. Transitions best derive collaboratively within Family Rounds strategic planning meetings involving emerging adult, parents, professional ptaff and the Medical Director. Patients are followed by the same care team throughout their treatment regardless of level of care.





**The Assessment Center:** 3-day comprehensive or within the first several weeks following admission.



**The Residence:** 24-hour care living in a supported apartment building owned and staffed by *Yellowbrick* while attending a Partial Hospitalization level of care at The Consultation & Treatment Center. The Residence also functions as a Community Center for all patients within all programs.



**Minding the Brain:** a six-hour/day PHP group program organized to restore neuro-regulation and associated command of behavioral impulsivity and symptoms. As described above this 8-12-week Partial Hospitalization program emphasizes Resetting the threat response and reward systems while beginning to establish new areas of emotional and instrumental competence.



**Life Strategies Program (LSP):** A six-hour PHP group program organized to address the specific developmental challenges of emerging adulthood. Embedded within LSP are the neuromodulation principles of mindfulness, mentalization, DBT/ACT/CBT self-regulation skills, sensorimotor embodiment in tandem with direct neuromodulation technologies being offered within the Center for Clinical Neuroscience. LSP can be accessed at either a Partial Hospitalization or IOP level of care. Individual psychotherapy occurs 3x/week.



**Special Services and Evening IOP:** Separate 3 1/2 hour specialty IOP Programs for adolescents, trauma recovery, addictions, eating disorders along with conditions presenting a troubled relationship between the body and self-experience (Soma-Self IOP).



**Center for Clinical Neuroscience (CCN)** provides collaborative and genomically informed psychopharmacology, *deep*TMS, neurofeedback, and DTCS. All patients in all programs receive CCN services. CCN technologies are also available as a standalone intervention for patients not in other *Yellowbrick* programs.



**Core Competence Home Health** provides home visitation, cognitive enhancement, occupational therapy, executive function and life skills training, education & career counseling, nutritional counseling, activity and exercise prescription, wellness education and is available for emerging adults receiving Partial Hospitalization or IOP services.



**Adolescent Services** focuses on emotional and behavioral regulation, identity formation and promoting individual and family resilience.

*Yellowbrick* hopes this description of our model and services can support trust and confidence in consideration of joining *Yellowbrick* in a partnership extending to the emerging adult, family, and the professional community. For those already working within *Yellowbrick*, it is our hope this description enhances your understanding and willingness to make full use of our model.



## Specialized Assessment & Treatment for Adolescents, Emerging Young Adults and their Families

Yellowbrick's mission is to serve as the national leader in psychiatric healthcare for adolescents, emerging young adults and their families. Yellowbrick provides integrated, intensive outpatient treatments based on the frontiers of neuroscience, psychotherapy, life skills and wellness research and practice. Yellowbrick's naturalistic, real-time, sober, open therapeutic community model offers an immersion in expert, collaborative, healing relationships.

*"Yellowbrick is an internationally unique treatment center integrating interdisciplinary research with expert clinical experience into a transformative, coherent treatment model."*

- Allan Schore, PhD  
UCLA Medical School & Editor,  
Norton Series of Interpersonal Neurobiology

*"Yellowbrick is a unique paradigm-changing model that creates a powerful opportunity for the diagnostically elusive and difficult to treat young adult."*

- Prudence Gourgeschon, MD, Past President,  
American Psychoanalytic Assn.

*"Yellowbrick defines the cutting edge"*

- Robert Ruiz, MD, MPH;  
Chief Flight Surgeon, FAA Midwest



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