

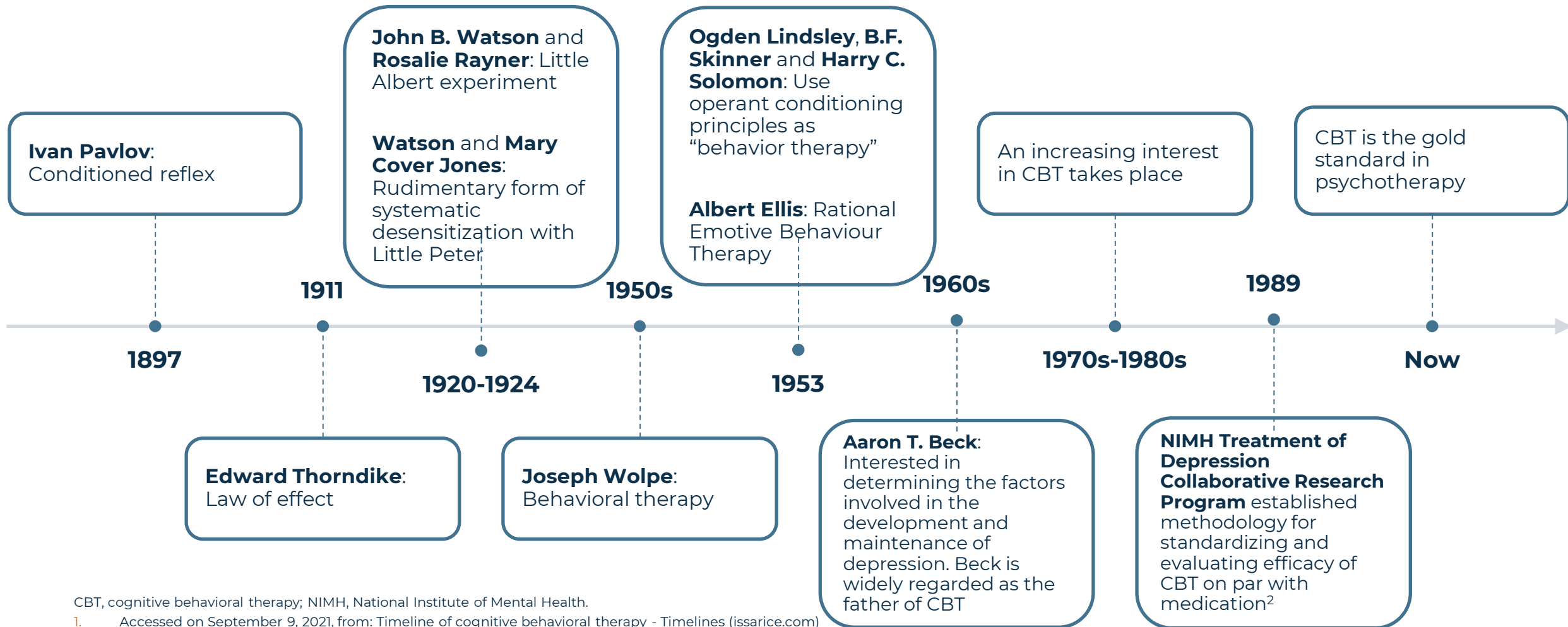


What is Cognitive Behavioral Therapy and How Does it Work?

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History of Cognitive Behavioral Therapy¹

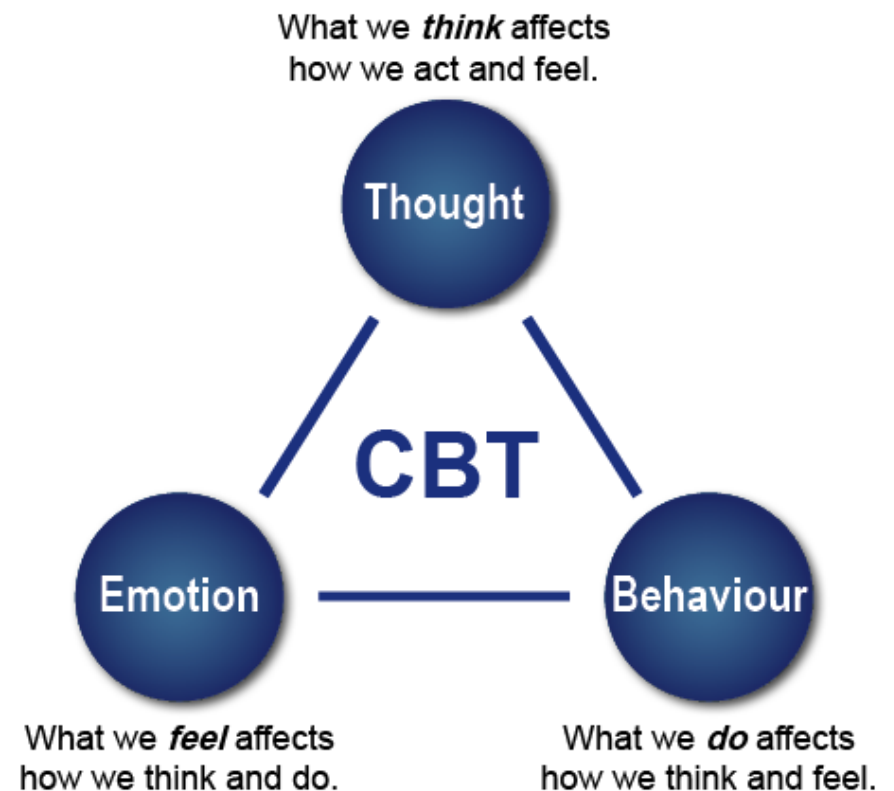


CBT, cognitive behavioral therapy; NIMH, National Institute of Mental Health.

1. Accessed on September 9, 2021, from: Timeline of cognitive behavioral therapy - Timelines (issarice.com)
2. Elkin, I., et al. (1989). *Arch Gen Psychiatry*, 46(11): 971-82.

Theoretical Background of Cognitive Behavioral Therapy (CBT)

- Fundamental premise is that how a person thinks, feels, and behaves determines how that person makes sense of their experiences
- During time of stress, maladaptive core beliefs may generate negative automatic thoughts
 - Yield emotions, sensations, and behaviors that comprise the symptoms of mental distress
- Cognitive therapy encourages individuals to engage in a process of self-reflection, in which thoughts are identified as ideas or hypotheses to be tested, rather than beliefs that are fixed



CBT, cognitive behavioral therapy.

1. Dinapoli, E.A. Scogin, F.R., (2014). Late-Life Depression, N.A. Pachana. *The Oxford Handbook of Clinical Geropsychology* (p 412-436). Oxford University Press.

Core Cognitive and Behavioral Techniques of CBT



Emotion Regulation¹

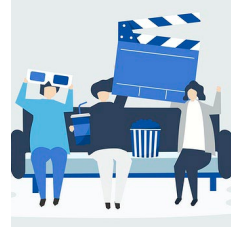
Mindfulness exercises: mindful breathing, mindful relaxation, and guided muscle relaxation

Nonjudgmental perception of acceptance & tolerance of emotions

Compassionate self-support

Identification of the causes of one's emotional response

Active modification of emotions



Behavioral Activation²

Activity monitoring

Assessment of life goals and values

Activity scheduling

Skills training

Contingency management

Procedures targeting avoidance



Cognitive Restructuring³

Thought identification and monitoring

Examining and challenging core beliefs about the self, world, and future

Verbal intervention (e.g., normalization, decatastrophizing, etc.)

Empirical hypothesis testing

CBT, cognitive behavioral therapy

1. Berking, M. et al. (2013). *Psychotherapy and Psychosomatics*; 82(4): 234-245.

2. Kanter, J. W. et al. (2010). *Clinical Psychology Review*; 30: 608-620.

3. Clark, D. A. *The (2014)*. Wiley Handbook of Cognitive Behavioral therapy, John Wiley & Sons, Ltd.

CBT is Effective for a Multitude of Mental Health Disorders

| Disorder | CBT | MED | OT | PBO | TAU | Comparison |
|---------------------------------|--------|-----|--------|-----|-----|-------------------|
| Depression | 51-87% | - | 45-70% | | | CBT>OT |
| Generalized Anxiety Disorder | 46% | - | - | - | 14% | CBT = OT, CBT>TAU |
| Childhood Anxiety | 56% | - | - | 28% | | CBT>PBO |
| Panic Disorder | 77% | - | 50% | - | - | CBT>OT |
| Borderline Personality Disorder | 82% | 56% | - | 18% | - | CBT, MED > PBO |
| Chronic Fatigue | 40% | - | - | - | 26% | CBT>TAU |
| Bulimia Nervosa | 40-44% | - | - | 27% | - | CBT>PBO |

Note. The table shows response rate percentages for CBT (from highest to lowest) compared to each comparison condition for every meta-analytic study reporting such data across disorder groups; -: no data reported; >: higher efficacy; =: equal efficacy; CBT, cognitive behavioral therapy; MED = medication/pharmacological approaches; OT = Other therapies (consisting of relaxation therapy, supportive therapy, or psychodynamic therapy); PBO = placebo/control treatments; TAU = Treatment as usual.

- Hofmann, S. G. et al. (2012). *Cognit Ther Res*. 36(5): 427-440.

Effect of CBT on Depression

CBT is an effective treatment for adult depression¹

- In a meta-analysis of 75 studies (CBT vs. control group) the mean effect size was Hedges $g = 0.71$ (95% CI 0.62 to 0.79), which corresponds to a NNT of 2.6

CBT has comparable response rates to pharmacotherapy²

- Combined treatment was significantly more effective than pharmacotherapy alone ($g = 0.49$)¹

CBT has enduring effects³

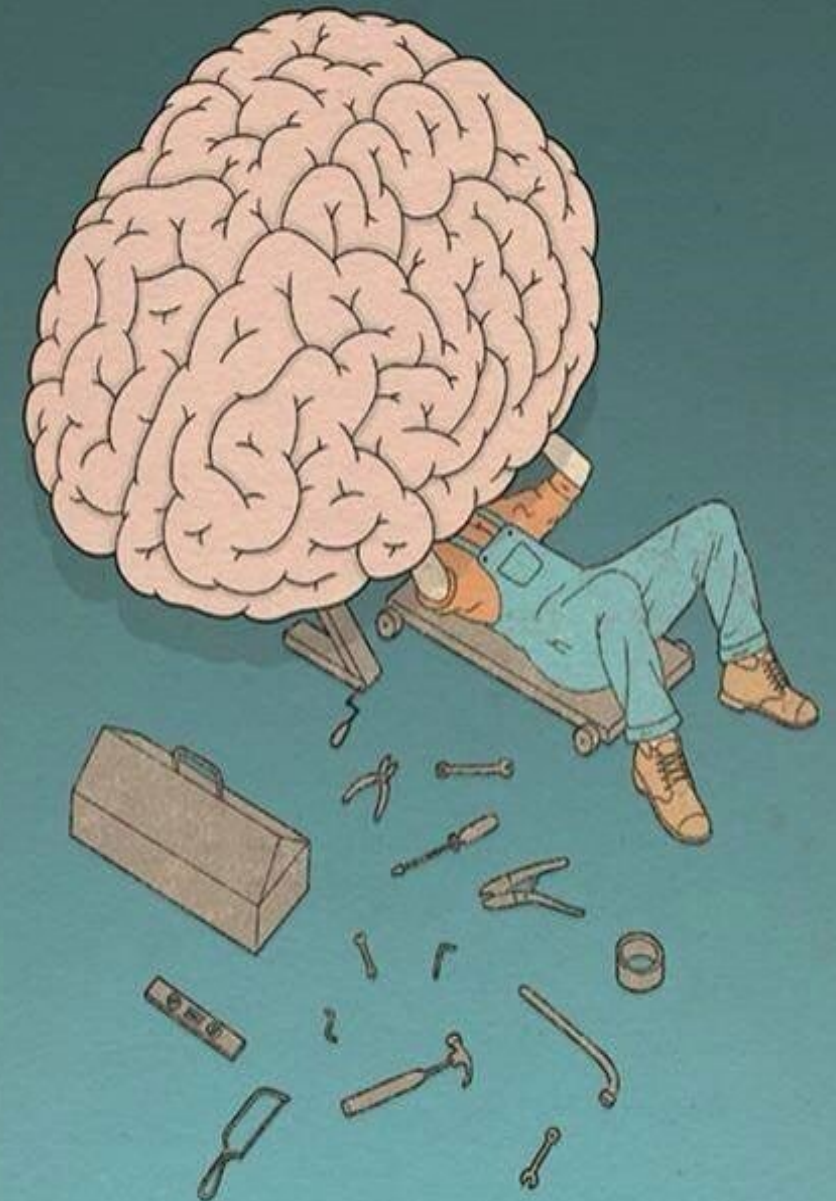
- CBT had lower relapse rates after 1- and 2-year follow-up intervals than pharmacotherapy³
- Magnitude of CBTs enduring effect was at least as large as keeping patients on continuation antidepressant medication⁴

CBT is sometimes preferred by patients over pharmacotherapy⁵

- 58% reported that they were likely or very likely to consider psychotherapy as a treatment option for depression (vs. 39% for medication)

CBT, cognitive behavioral therapy; NNT, number needed to treat

1. Cuijpers, P. et al. (2013). *Can Journal of Psychiatry*. 58(7): 376-385.
2. DeRubeis, R. J. et al. (2005). *Arch Gen Psychiatry*. 62: 409-416.
3. Vittengl, J. R. et al. (2007). *J Consult Clin Psychol*. 75(3): 475-488.
4. Driessen E & Hollon S. D. (2010). *Psychiatr Clin North Am*. 33(3): 537-555.
5. Dorow, M. et. Al. (2018). *Frontiers in Psychiatry*. 9(181); 1-13.



Changes in Neural Circuits associated with CBT in Depression

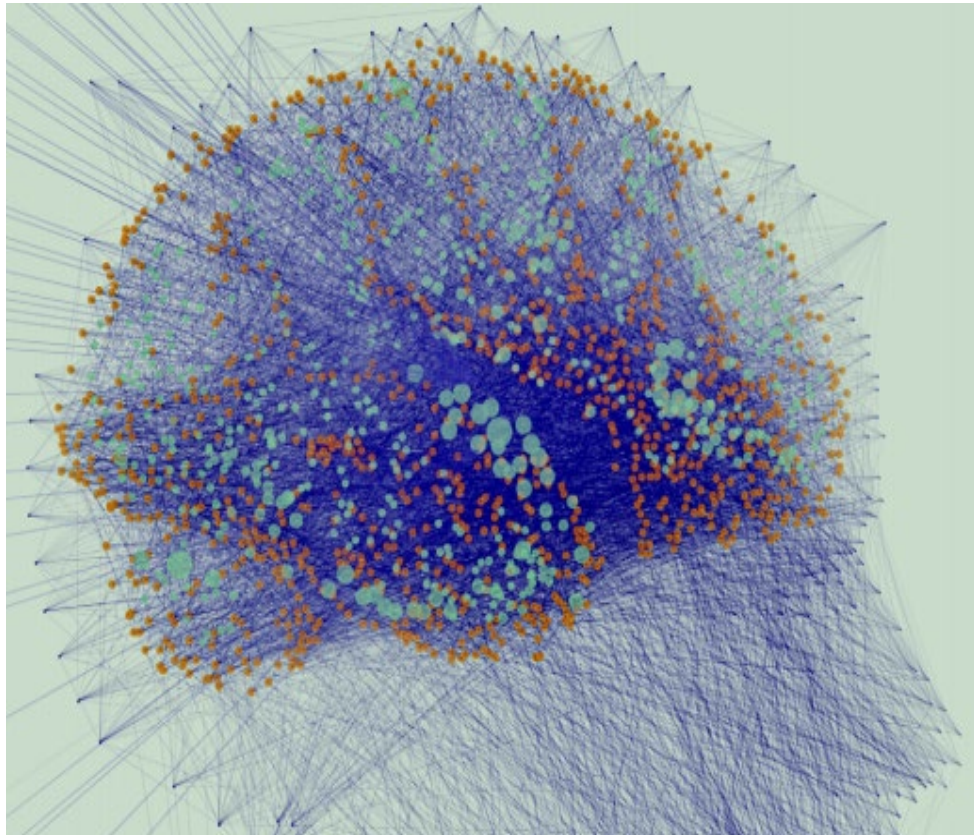


- Following CBT, changes have occurred in cerebral areas that are part of the fronto-limbic system (fMRI and PET scan data):
 - Cingulate cortex
 - Prefrontal cortex
 - Amygdala-hippocampal complex
- The pattern of activation and connectivity in these areas vary across studies
- Other neuroimaging studies (MRS, SPECT) have suggested modulation of serotonergic transmission or an improvement in neuronal function following CBT

CBT, cognitive behavioral therapy; fMRI, functional magnetic resonance imaging; PET, positron emission tomography; MRS, magnetic resonance spectroscopy; SPECT, single photon emission computed tomography.

1. Chalah, M. A. & Ayache, S. (2018). *S. Brain Sciences*. 8, 150; doi: 10.3390/brainsci8080150.

Brain Activity may Help Predict Success of CBT in Depression



- Variance in neural activity in regions that underlie emotion processing and/or emotion regulation are promising markers of treatment outcome¹
- Following 12-weeks of CBT in patients with anxiety and depression:
 - High, relative to low, occipital subgroup was less symptomatic and had more responders¹
 - Reduced baseline superior occipital-postcentral gyrus functional connectivity in responders compared to non-responders¹
 - Greater pre-treatment amygdala and insula activation to emotional faces (vs. shapes) corresponded with greater symptom improvement²

CBT, cognitive behavioral therapy.

1. Klumpp, H. et al. (2020). *Psychological Medicine*. 1-11. <https://doi.org/10.1017/S0033291720003979>.
2. Gorka, S. M. et al. (2019). *Neuropsychopharmacology*. 44: 1639-1648.

Depression associated with Greater Perceived Barriers to Psychotherapy

- Stigma
- Lack of motivation
- Emotional concerns
- Negative evaluation of therapy
- Misfit of therapy to needs
- Time constraints
- Cost of therapy
- Participation restrictions (e.g., problems with transportation)
- Availability of services (e.g., lack of available trained therapist; don't know how to find therapist)



1. Mohr, D. C. et al. (2010).. *Journal of Clinical Psychology*. 66(4): 394-409.

Multi-media Platforms may Aid in the Dissemination and Implementation of CBT

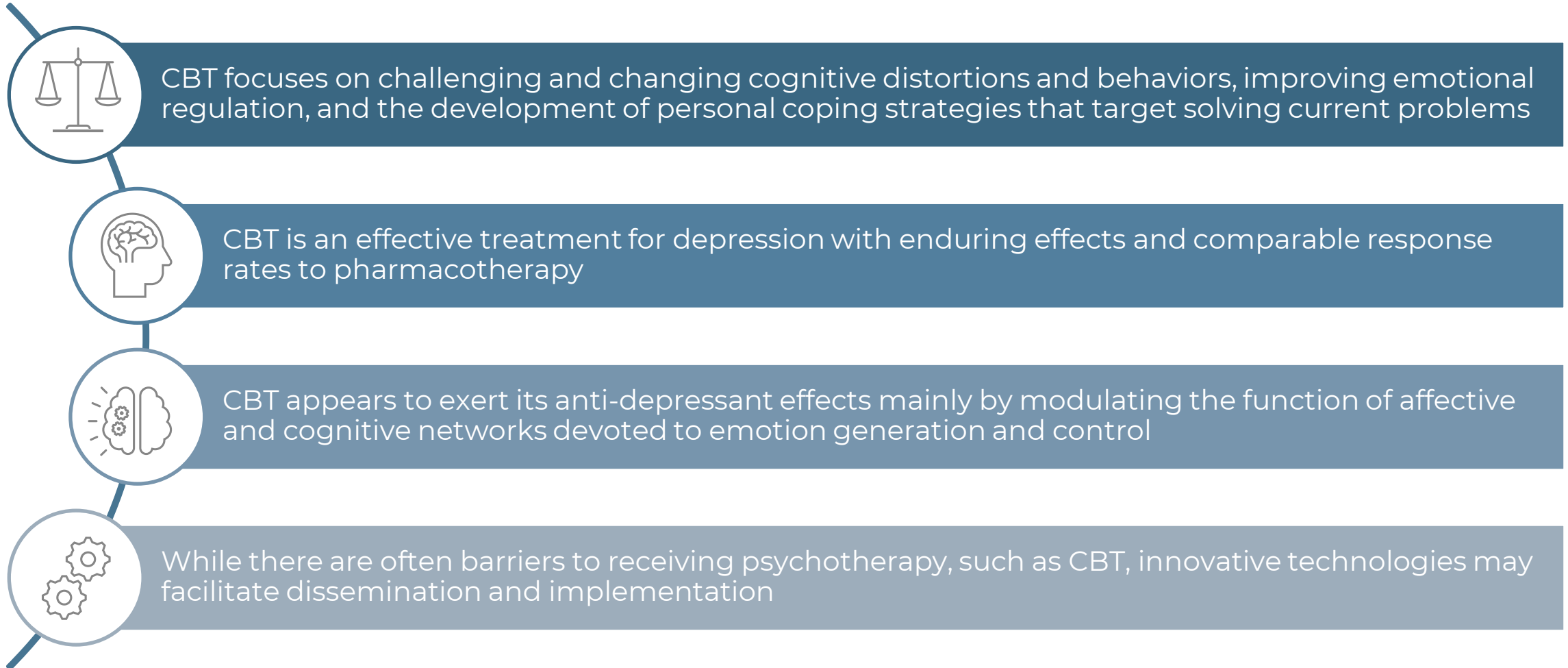
- Standardized CBT approaches can be delivered using one, or a combination of, the following multimedia platforms: Self-help books, Audio or video recordings, Telephone, Computer programs (both online and desktop), Apps, E-mail, and Text messages¹
- Meta-analyses have shown promising effects of eCBT when compared to face-to-face CBT and control conditions^{2,3}



CBT, cognitive behavioral therapy; eCBT, electronically-delivered cognitive behavioral therapy.

1. Davies, S. R. (2018). *Cochrane Database Syst Rev*. doi:10.1002/14651858.CD013184.
2. Luo, C et al. (2020). *EClinicalMedicine*. 21, 100442.
3. Andersson, G . et al. (2014). *World Psychiatry*. 13(3): 288-295. (2014).

Summary



CBT, cognitive behavioral therapy