

eTherapy: Powered by CBT4CBT

Essential for Better SUD Treatment Outcomes: Evidence of CBT4CBT's effectiveness and value for the treatment of substance use disorder

Over the course of five randomized clinical trials over more than 10 years, Kathleen Carroll, PhD, the Albert E. Kent Professor of Psychiatry at Yale University, have proven the efficacy, durability, and value of the computer-based cognitive behavioral therapy (CBT) programs, named CBT4CBT, she and her colleagues developed for the treatment of substance use disorders.

The trials have studied:

- the use of CBT4CBT as an adjunct to Treatment as Usual (TAU), as compared to TAU, as compared to clinician-delivered CBT, and as an adjunct to, separately, methadone-maintenance and medication-assisted treatment (MAT) using buprenorphine
- the use of CBT4CBT among individuals with a variety of substance use disorders, among individuals with a primary alcohol use disorder, among individuals with a primary opioid use disorder receiving MAT, and among both English and Spanish-speaking populations

The durability of the CBT4CBT programs is particularly important – the trials have consistently demonstrated that individuals using CBT4CBT as part of their treatment had better long-term outcomes, even six months after they had completed the CBT4CBT modules, as compared to those who didn't have access to the CBT4CBT modules in their treatment.

The following is a summary of key findings from these trials, grouped by the findings of better outcomes, durable impact, and return on investment.



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BETTER OUTCOMES

Figure 1 shows key findings from the first trial. Among a population with long-term addiction to cocaine, alcohol, and opiates, those who got CBT4CBT along with Treatment As Usual (TAU), which was comprised of individual and group counseling, had significantly fewer urine specimens testing positive for drugs & alcohol compared to those who got TAU only.

Fig 1: % of Urine Specimens Positive for Drugs and Alcohol

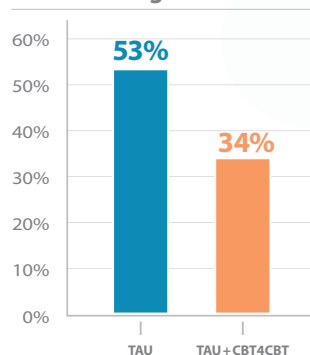


Figure 2 shows the results from the third trial, where individuals either got TAU alone, TAU plus CBT4CBT, or CBT4CBT with brief clinical monitoring. Again, in this trial, there was a substantial difference in outcomes between those who got CBT4CBT and those who didn't, and little difference between those who got CBT4CBT with either TAU or monitoring.

Fig 2: % No Heavy Drinking Days Last 4 Weeks

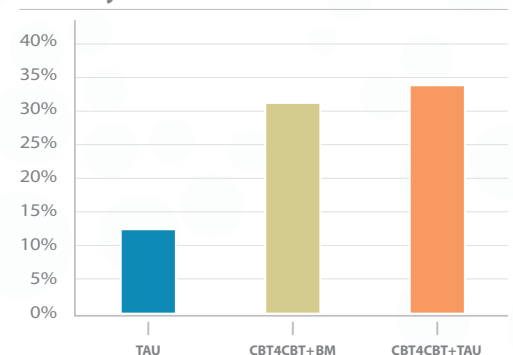
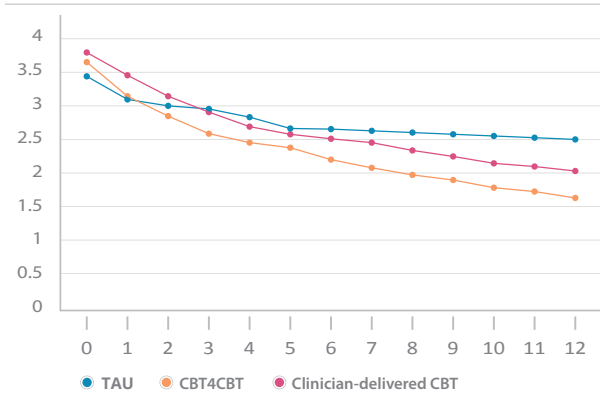


Figure 3 shows the results from the fifth clinical trial, where CBT4CBT was compared with TAU as well as with clinician-delivered CBT (pre- and postdoctoral students trained and supervised deliver CBT). The results below, as well as the 90-day follow-up results (see Figure 6), demonstrates better outcomes for CBT4CBT than even high quality, clinician-delivered CBT.

Fig 3: Days per Week of Any Drug or Alcohol Use Over 12-Week Treatment Period



DURABLE IMPACT

Figure 4 shows in the first trial the individuals getting CBT4CBT not only did better during treatment, but also showed continued improvement in the six months after treatment, while the TAU group did not.

Fig 4: Days of Any Drug Use by Month

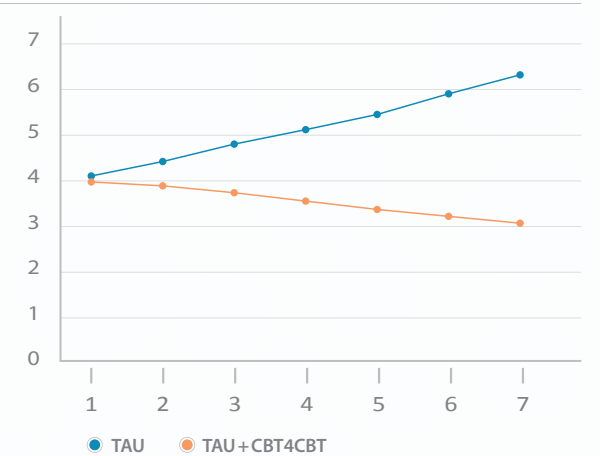


Figure 5 shows the second trial, in which individuals with an addiction to Cocaine were treated with Methadone Maintenance and either TAU or CBT4CBT, also measured durability of the CBT4CBT even after the patient's use and access to the programs ended after eight weeks of treatment.

Fig 5: Mean Estimated Frequency of Cocaine Use by Months

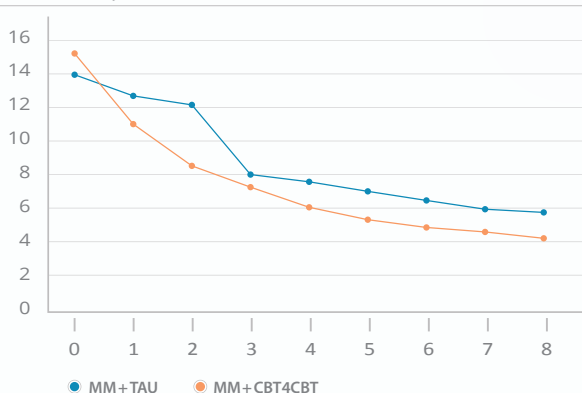
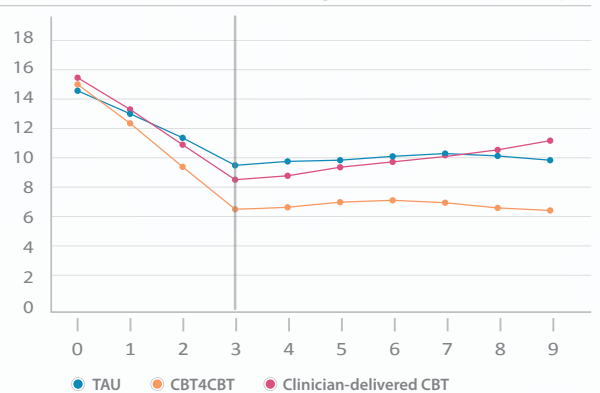


Figure 6 shows the durability of CBT4CBT as measured in the fifth clinical trial, especially in comparison to the clinician-delivered CBT.

Fig 6: Days of Any Drug Use During Treatment (0-3 Months) and Through 6-Month Follow-up



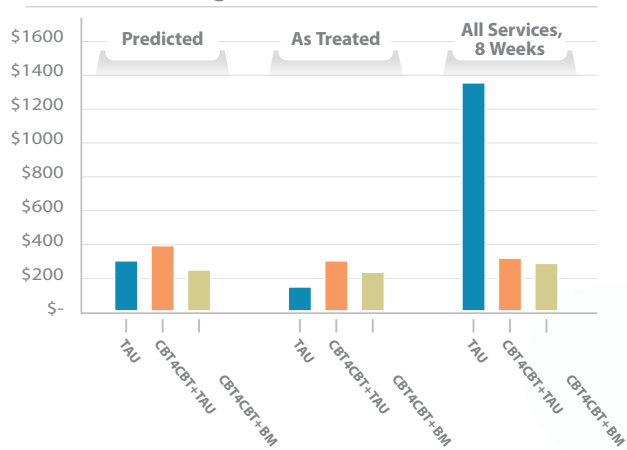
RETURN ON INVESTMENT

The third trial included studying the relative costs of the three treatment approaches, both the cost of the intended treatment and the actual, relevant costs incurred by each population during the treatment period (8 weeks) and during the six-month follow-up, including, but not limited to, the costs of ED visits, inpatient detoxification, and intensive outpatient care.

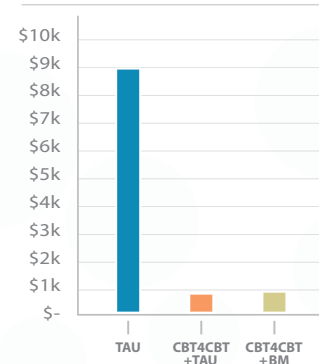
Figure 7 shows CBT4CBT + Treatment as Usual (TAU) was predicted to be the most expensive, including the TAU costs of one individual session and eight group therapy sessions, plus the cost of the CBT4CBT program. In actuality, the group randomized to get TAU didn't use all nine of the sessions (only 26% completed treatment), so the actual, average cost "as treated" for the TAU population was less than \$200. However, the study also measured other SUD-related treatment costs and, for the TAU population, this averaged \$1,345.14; more than 4x the similar costs incurred by the two groups which had gotten CBT4CBT.

Figure 8 compares the average per-patient costs, including incarceration costs, over the six-month follow-up period. The difference between TAU and the groups that got CBT4CBT is greater than 8x.

**Fig 7: ROI for CBT4CBT—
Costs During 8 Weeks of Treatment**



**Fig 8:
ROI for CBT4CBT—
Costs Over 6 Months**



TRIALS AND PAPERS

TRIAL #1

Randomized Clinical Trial of 77 individuals seeking treatment for substance dependence at an outpatient community setting were randomly assigned to standard treatment or standard treatment with biweekly access to computer-based training in CBT (CBT4CBT) skills

Carroll, K.M., Ball, S.A., Martino, et al (2008). Computer-assisted delivery of cognitive behavioral therapy for addiction: A randomized trial of CBT4CBT. *The American Journal of Psychiatry*, 165:7, 881-889. PMID: PMC2562873.

<http://www.ncbi.nlm.nih.gov/pubmed/18450927>

Carroll, K.M., Ball, S.A., Martino, et al (2009). Enduring effects of a computer-assisted training program for cognitive behavioral therapy: A six-month follow-up of CBT4CBT. *Drug and Alcohol Dependence*, 100, 178-181.

<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2742309>

TRIAL #2

Randomized Clinical Trial of 101 cocaine-dependent individuals maintained on methadone were randomly assigned to standard methadone maintenance or methadone maintenance with weekly access to CBT4CBT, with seven modules delivered within an 8-week trial.

Carroll, K.M., Kiluk, B.D., Nich, C., Gordon, M.A., Portnoy, G.A., Martino, D.R., & Ball, S.A. (in press). Computer-Assisted Delivery of Cognitive-Behavioral Therapy: Efficacy and durability of CBT4CBT among cocaine-dependent individuals maintained on methadone. *Am J Psychiatry*, 2014 Apr;171(4):436-44.

<https://www.ncbi.nlm.nih.gov/pubmed/24577287>

TRIAL #3

Randomized Clinical Trial of 68 individuals with a current AUD to 1 of 3 treatments at a community outpatient facility: (i) standard treatment as usual (TAU); (ii) TAU plus on-site access to a computerized CBT targeting alcohol use (TAU + CBT4CBT); or (iii) CBT4CBT plus brief weekly clinical monitoring (CBT4CBT + monitoring). Participant alcohol use was assessed weekly during an 8-week treatment period, as well as 1, 3, and 6 months after treatment.

Carroll, K.M., Kiluk, B.D., Devore, K.A., Buck, M.B., Nich, C., et al (2016). Randomized Trial of Computerized Cognitive Behavioral Therapy for Alcohol Use Disorders: Efficacy as a Virtual Stand-Alone and Treatment Add-On Compared with Standard Outpatient Treatment. *Alcoholism: Clinical and Experimental Research*, Vol. 40, No. 9 September 2016.

<https://www.ncbi.nlm.nih.gov/pubmed/27488212>

Kiluk, B.D., Frankforter, T.L., Cusumano, M., Nich, C., & Carroll, K.M. (2018). Change in DSM-5 Alcohol Use Disorder Criteria Count and Severity Level as a Treatment Outcome Indicator: Results from a Randomized Trial. *Alcoholism: Clinical and Experimental Research*, 2018 Jun 5. doi: 10.1111/acer.13807

<https://www.ncbi.nlm.nih.gov/pubmed/29870051>

TRIAL #4

Randomized Clinical Trial of 137 individuals who met DSM-IV-TR criteria for current substance abuse or dependence were randomly assigned to receive treatment as usual, weekly individual CBT, or CBT4CBT with brief weekly monitoring.

Brian D. Kiluk, Ph.D., Charla Nich, Kathleen M. Carroll, Ph.D, et al (2018). Randomized Clinical Trial of Computerized and Clinician-Delivered CBT in Comparison With Standard Outpatient Treatment for Substance Use Disorders: Primary Within-Treatment and Follow-Up Outcomes. *Am J Psychiatry*, 2018 May 24;appiajp201817090978.

<https://www.ncbi.nlm.nih.gov/pubmed/29792052>

TRIAL #5

Randomized Clinical Trial of Culturally-Adapted CBT4CBT
American Journal of Public Health, in press.