



TAO-Related Improvement

Summary

People who use TAO's online mental health tools over several weeks improve their mental health functioning significantly. This white paper shows the benefits of using several of TAO's protocolled treatments. Treatments included Cognitive Behavioral Treatment for anxiety or depression, Behavioral Activation for depression, a transdiagnostic Acceptance and Commitment Therapy, and a set of treatment sessions for relationship and communication problems. Consistently, the higher the engagement with TAO tools, the greater the gains in symptoms reduction, sense of well-being, and life functioning.

What is TAO?

TAO is a digital platform of tools and educational materials to help improve mental health, wellness, and life functioning. TAO tools include high-quality interactive educational sessions, screening and progress measures, practice tools, a mindfulness library, and a HIPAA-compliant video conferencing tool. TAO tools can be used self-directed or provider-assisted.

Self-directed vs. Provider-assisted

We examined differences between participants who used TAO as only self-directed versus participants assisted by a provider, counselor, or instructor. There were no significant differences in level of engagement between groups. Self-directed users engaged in as many activities in TAO as assisted users.

Participants

All participants were clients enrolled in TAO pathways by an institution subscribing to TAO and agreeing to contribute aggregate data. Data includes 2600 individuals who completed a progress measure two or more times while using TAO. Individual participants were provided information about the research and agreed to participate. Participating TAO subscribers included colleges and universities in the US and Canada, the Province of Labrador and Newfoundland in Canada, a community mental health center, and an Employee Assistance Program.

Overview of Data

Data on use of the TAO online and digital mental health tools was collected from July 2018-December 2018. Each client completed one type of progress measure selected by the institution licensing TAO. Possible progress measures included the BHM-20 (Behavioral Health Measures-20), the PHQ-9 (Patient Health Questionnaire-9), the WEMWBS (Warwick-Edinburg Well-being Scale), or the GAD-7 (Generalized Anxiety Disorder-7). For the sake of comparison, all scores were converted to Z-Scores with a mean of 0 and a SD of 1 and examined in aggregate.

Pathways/Treatments Analyzed

TAO includes several protocolled treatments (also called pathways). Participants in each pathway were treated as separate groups. Typically, participants complete one educational module per week and complete a progress measure every one to two weeks.

Table 1

Pathway/Treatment	Number of participants
CBT (anxiety)	845
CBT (Depression)	407
Behavioral Activation	228
Acceptance and Commitment Therapy	724
Relationships and Communications	415

Results

Results for the analysis of each treatment is reported below. All treatments resulted in a linear trend. As more sessions and modules in TAO were completed, scores reflected more improvement.

Overall, do TAO users improve in functioning over time?

We examined changes in outcome measures for all TAO users across five sessions. A significant linear trend was found for improvement in functioning.

Improvement in functioning (z-scores)

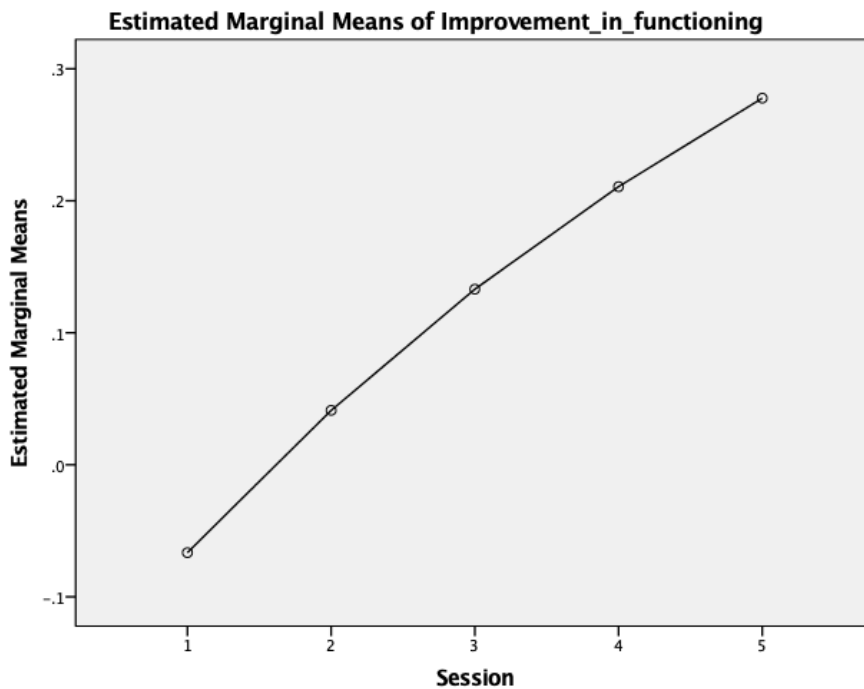
N = 2077

F (4,8304) = 187.16, $p < .0001$

Linear trend: Partial eta squared = .18 (most important trend)

Quadratic trend: Partial eta squared = .003

<u>Session</u>	<u>Mean</u>	<u>sd</u>
1	-.07	.89
2	.04	.90
3	.13	.94
4	.21	.94
5	.28	.96



Do TAO users of CBT (anxiety) improve over time?

We examined changes in outcome measures for all TAO users across five sessions. Significant linear trend was found for anxiety.

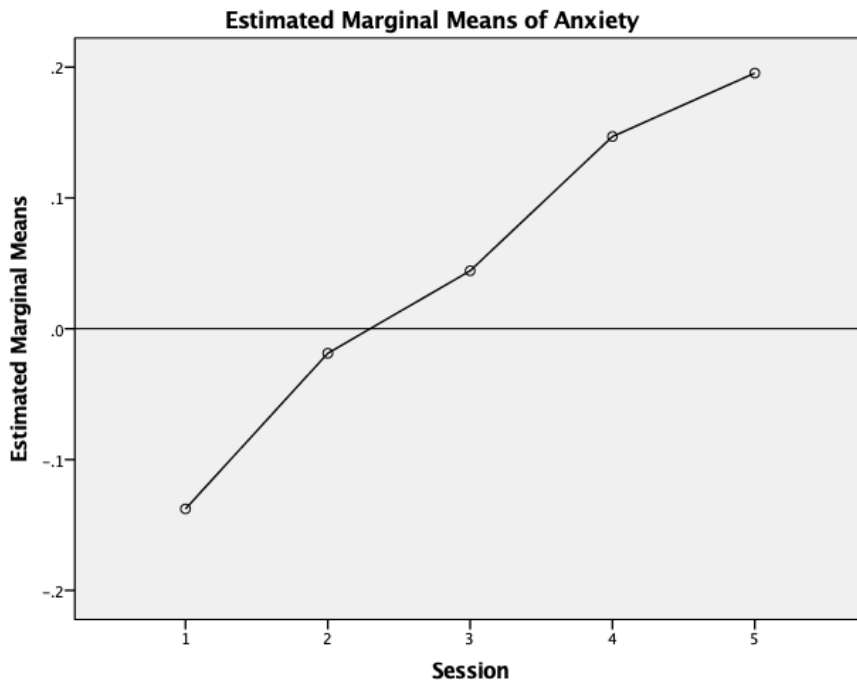
CBT Anxiety (z-scores)

N = 845

$F(4,3376) = 72.82, p < .0001$

Linear trend: Partial eta squared = .18

<u>Session</u>	<u>Mean</u>	<u>sd</u>
1	-.14	.88
2	-.02	.88
3	.04	.93
4	.15	.93
5	.20	.96



Do TAO users of CBT (depression) improve over time?

We examined changes in outcome measures for all TAO users across five sessions. Significant linear trend was found for CBT.

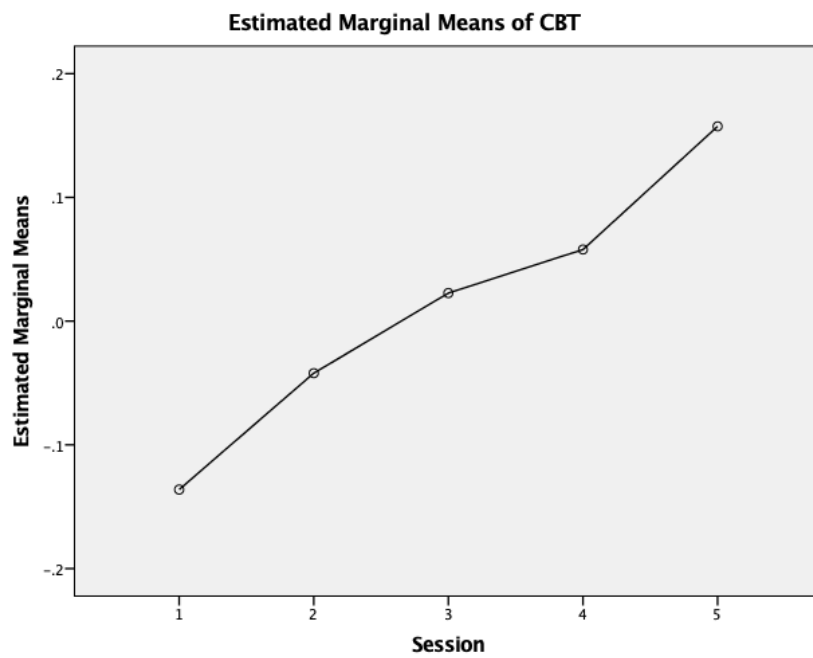
CBT (z-scores)

N = 407

F (4,1624) = 21.85, p < .0001

Linear trend: Partial eta squared = .11

<u>Session</u>	<u>Mean</u>	<u>sd</u>
1	-.14	1.02
2	-.04	1.05
3	.02	1.04
4	.06	1.01
5	.16	1.07



Do TAO users of Behavioral Activation (BA) improve over time?

We examined changes in outcome measures for all TAO users across five sessions. Behavioral Activation users tended to begin with more distress and pathology. Significant linear trend was found for BA.

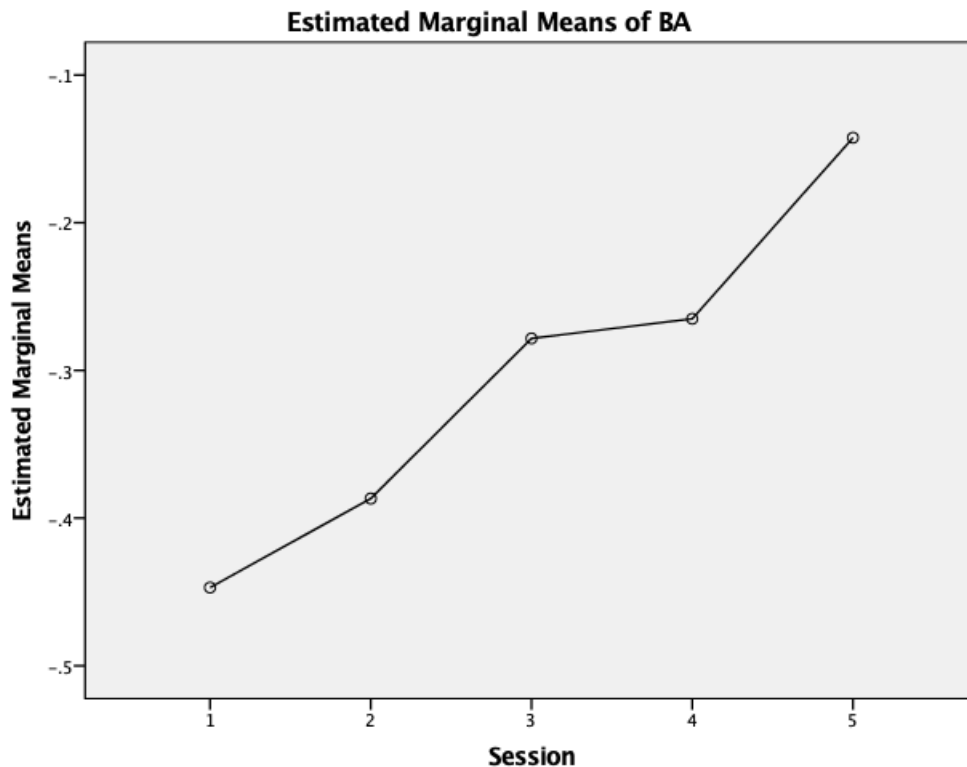
BA (z-scores)

N = 228

F (4,908) = 11.45, $p < .0001$

Linear trend: Partial eta squared = .12

Session	Mean	sd
1	-.45	.96
2	-.39	.94
3	-.28	1.00
4	-.27	.99
5	-.14	1.02



Do TAO users of Acceptance and Commitment Therapy (ACT) improve over time?

We examined changes in outcome measures for all TAO users across five sessions. ACT users tended to begin with lower levels of distress than users of other pathways. Significant linear trend was found for ACT.

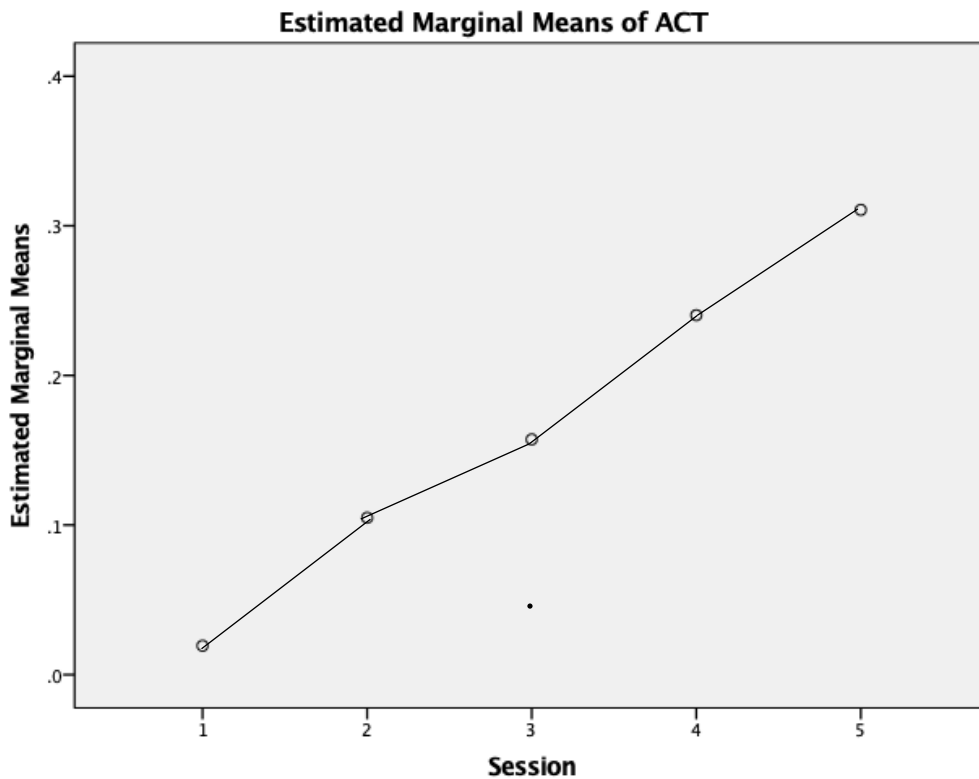
ACT (z-scores)

N = 724

F (4,2892) = 47.15, p < .0001

Linear trend: Partial eta squared = .14

Session	Mean	sd
1	.02	.96
2	.10	.96
3	.16	.98
4	.24	.95
5	.31	.99



Do TAO users of Relationships and Communications improve over time?

We examined changes in outcome measures for all TAO users across five sessions. Significant linear trend was found for relationships and communication.

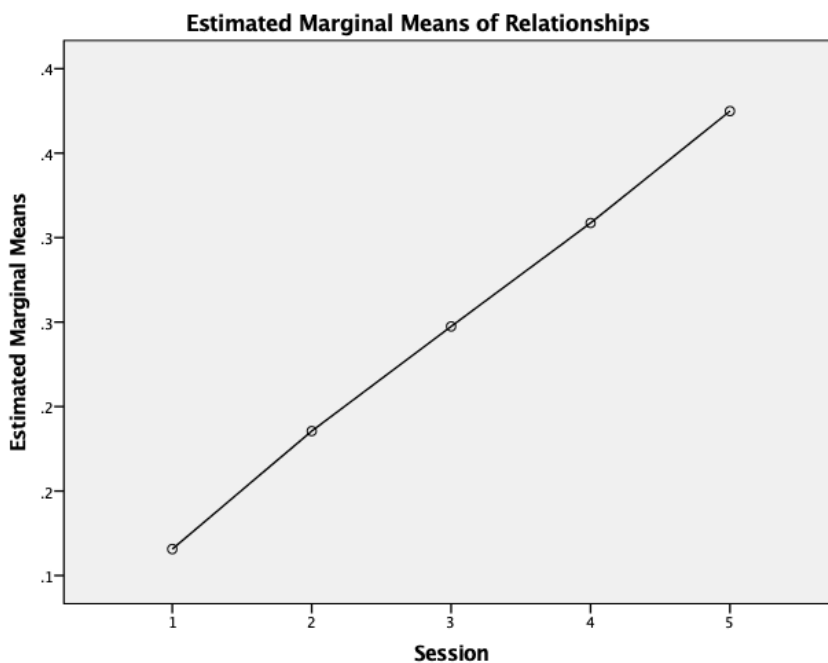
Relationships and communication (z-scores)

N = 415

F (4,1656)=18.72, p < .0001

Linear trend: Partial eta squared = .11

<u>Session</u>	<u>Mean</u>	<u>sd</u>
1	.12	1.01
2	.19	1.01
3	.25	1.09
4	.31	1.07
5	.37	1.04



Conclusions

All TAO treatments evaluated proved to be effective in improving mental health functioning. Treatments were effective both with provider assistance and with self-directed interventions. Differences in effectiveness among the treatment appeared to stem from differences in distress and life functioning pre-treatment. For example, more ACT participants scored in the non-problematic, normal functioning range pre-treatment, while more BA participants tended to have much higher levels of distress and lower functioning than participants in other treatment groups.

In this study we only looked at 5 repeated measures of progress which were administered over 5-9 weeks of participation in TAO. Future whitepapers will examine the results with our newer treatments, Alcohol and Drug Recovery Skills, as well as Chronic Pain.