

# Mental Wellbeing Improvement

Using the Warwick-Edinburgh Mental Wellbeing Scale (WEMWBS)

## Introduction

With consistent use, TAO's online mental health tools help clients improve their mental health measures on the Behavioral Health Measure 20 (BHM-20) scales (TAO-Related Improvement, 2017a). Therapists enjoy using TAO with their clients because they have more time in-session to talk about the clients' personal situations, while still providing the mental health knowledge and tools to maximize their clients' improvement (Therapist Feedback, 2017).

### Key findings:

- Client averages show a 4.27-point improvement by the fourth wellness measure submission.
- Clients complete the WEMWBS about once every 11 days.
- WEMWBS and BHM-20 are positively correlated.
- More progress was seen when clients logged in more often.

Overall, WEMWBS is a useful alternative to other progress measures. It can be used to measure meaningful change in TAO users.

This white paper shows the benefits of online mental health tools for improving mental wellbeing using the Warwick-Edinburgh Mental Wellbeing Scale (WEMWBS). The WEMWBS is an appropriate replacement for BHM-20 or PHQ-9 to measure clients' wellbeing and track changes in wellbeing. WEMWBS improvement is shown to correlate with BHM-20 improvement. More engagement with TAO is correlated with more improvement.

## Overview of Data

Data on therapists' and clients' use of the TAO website in the USA was collected from October 10<sup>th</sup>, 2016 – May 31<sup>st</sup>, 2018. This data includes 1,180 clients who all had begun treatment prior to March 31<sup>st</sup>, 2018 and who had completed the WEMWBS<sup>®</sup> measure at least twice after August 2016.

Clients were assigned to at least one of 9 treatments: Anxiety (Student or Adult), Behavioral Activation, Acceptance and Commitment Therapy, Cognitive Behavioral Therapy, Pain Management, Interpersonal Relationships and Communication, or one of two Substance-Abuse and Recovery treatments.

## Progress Measure: WEMWBS<sup>®</sup>

The WEMWBS is a 14-item scale designed to measure general mental wellbeing in a population. While it is not designed to diagnose mental health disorders, it is also used for project evaluation and mental health monitoring during other treatments. The WEMWBS has been shown to be responsive to changes in mental wellbeing for both adult and

teenaged populations (Maheswaran, Weich, Powell, & Stewart-Brown, 2012). Results from the WEMWBS also correlate highly with the PHQ-9, among other similar scales of mental wellbeing (Kroenke et al., 2001).

*“While it is impossible to be precise about how much change in WEMWBS is considered ‘meaningful’, best estimates range from 3 to 8 WEMWBS points difference between ‘before’ and ‘after’ time points.”*

– WEMWBS Practice-Based User Guide

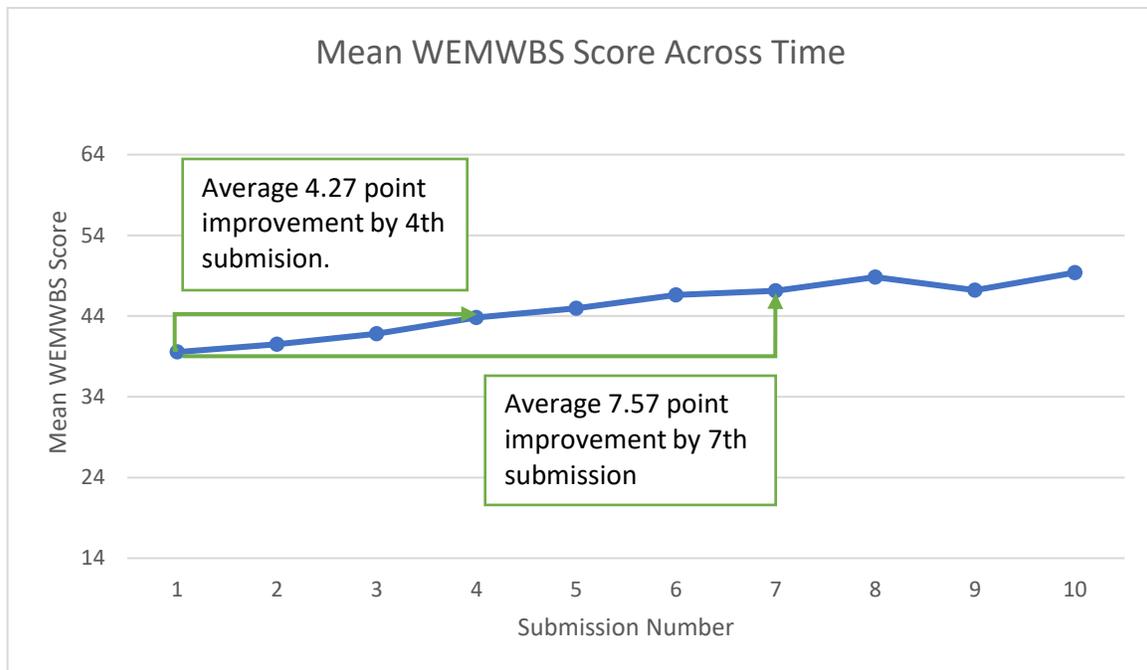


Figure 1. Mean WEMWBS Score for each submission number with at least 10 submissions.

### Mental Wellbeing Improvement

WEMWBS creators found that between a 3- to 8-point change in score from pre- to post-treatment was evidence of a meaningful “felt” difference in wellbeing. On average, our users improved by 3 points by their fourth submission and by 8 points by their 8th submission.

Users who submitted only two or three WEMWBS measures did not show as much improvement as those who completed 4 or

more measures (see Figure 2). To a certain extent, users who stay in treatment longer, or who submit more progress measures, show more improvement (a mean improvement of 2.86 and median of 3 for those who submitted four times). This may also be interpreted as engagement with the product – clients who enjoy and use TAO more regularly are also likely to complete a progress measure more regularly.

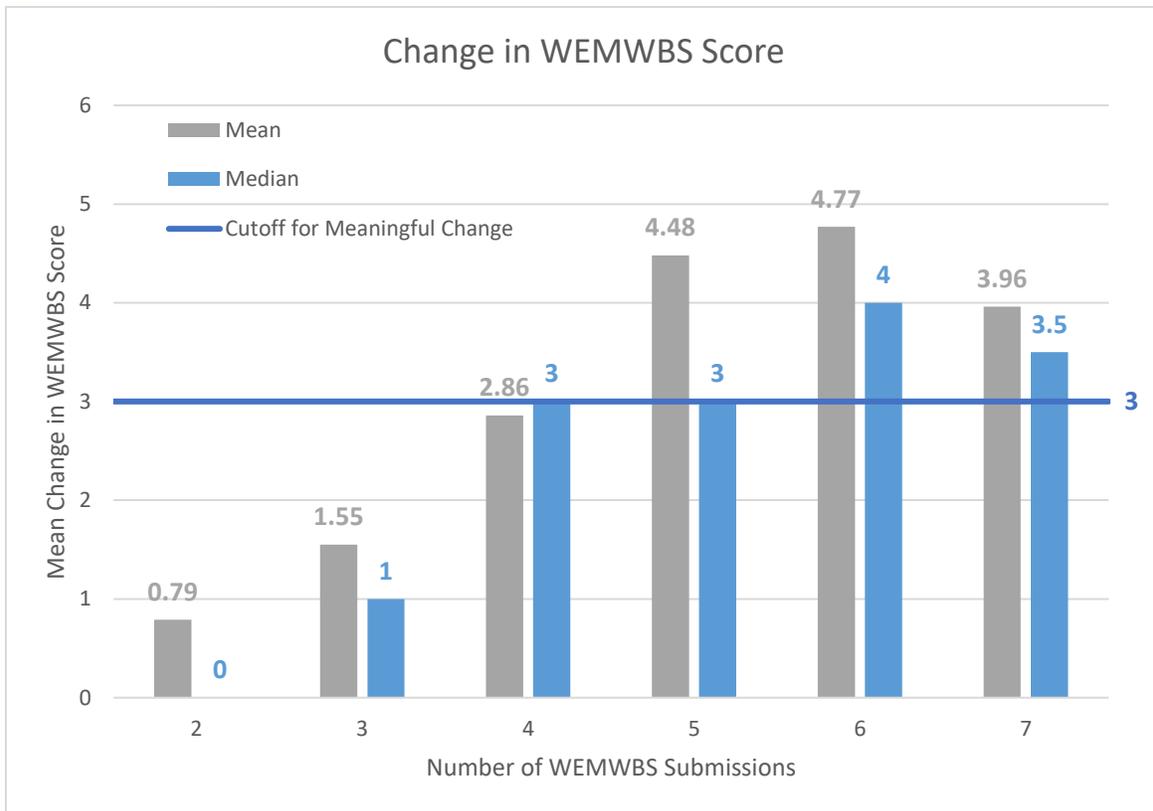


Figure 2. Mean change in WEMWBS scores from first to last submission. Data includes users with at least two submissions and submission categories with at least 10 users.

To test this, we look at how often the WEMWBS is submitted and the number of sessions and logs completed between submissions.

#### Number of Days Between Submissions

Submission	M days	N
1	0	4777
2	11.78	729
3	12.48	225
4	12.83	90
5	8.58	52
6	12.11	31
7	11.82	28
8	15.57	7
9	13.18	5
10	11.05	6
11	5.27	2
12	5.42	2
13	16.88	2
14	18.00	1

Figure 3. Mean number of days since last submission for N clients who submitted.

#### Time Between Submissions

Clients submit the WEMWBS, on average, every 11 days (see Figure 3). Time between submissions was not correlated with improvement shown on the WEMWBS ( $r = .04$ ). However, clients were able to complete sessions, logs, and mindfulness meditations in the days between submissions. Next, we test whether engagement with TAO Tools accounts for change in WEMWBS score.

#### TAO Tools

WEMWBS improvement from pre- to post-treatment were correlated with the number of times a client logged in, but not necessarily with the number of tools used. The number of times a user logged in was positively correlated with improvement pre- to post-treatment,  $r = .16$ ,  $p < .001$ . However, neither the number of

sessions completed ( $r = .09$ ), the number of logs completed ( $r = -.02$ ), nor the number of mindfulness meditations completed ( $r = .08$ ) were correlated with improvement pre- to post-treatment. However, those who completed mindfulness meditations showed more improvement ( $M = 0.92$  points,  $SD = 5.21$ ) than those who did not ( $M = .26$  points,  $SD = 3.31$ ),  $t(343.63) = -2.28$ ,  $p = .02$ . Completion of sessions and logs did not show a categorical difference in WEMWBS improvement.

### Correlation with BHM-20

Change in WEMWBS Score was positively correlated with change in BHM-20 subscales. All but two scales were statistically significantly related (see Figure 4). WEMWBS is therefore a suitable replacement for the BHM-20 to measure change in client's wellbeing.

### Conclusion

WEMWBS can be used as a suitable replacement for BHM-20, PHQ-9, and other progress measures to monitor your clients' wellbeing and to recognize meaningful change. Both mental health users and non-users believed WEMWBS was easy to understand and complete (Taggart, Stewart-Brown, & Parkinson, 2015). It also had good face-validity in that both groups

**Correlation between WEMWBS and BHM-20**

<b>Change in BHM-20 Subscale</b>	<b>WEMWBS SCORE CHANGE R</b>	<b>P</b>	<b>N</b>
<b>Global Mental Health</b>	<b>.35</b>	<b>&lt; .001</b>	<b>290</b>
<b>Wellbeing</b>	<b>.29</b>	<b>&lt; .001</b>	<b>293</b>
<b>Life Functioning</b>	<b>.31</b>	<b>&lt; .001</b>	<b>289</b>
<b>Psychological Symptoms</b>	<b>.24</b>	<b>&lt; .001</b>	<b>241</b>
<b>Anxiety</b>	<b>.23</b>	<b>&lt; .001</b>	<b>292</b>
<b>Depression</b>	<b>.33</b>	<b>&lt; .001</b>	<b>294</b>
Alcohol and Drugs	.16	.13	89
<b>Bipolar</b>	<b>.25</b>	<b>&lt; .001</b>	<b>195</b>
Eating Disorder	.19	.17	53
<b>Harm to Others</b>	<b>.35</b>	<b>.02</b>	<b>43</b>
<b>Suicide</b>	<b>.20</b>	<b>.02</b>	<b>138</b>

Figure 4. Correlation between change in BHM-20 subscales and WEMWBS score from pre- to post-treatment.

suggested the scale measure some aspect of "positive mental health".

Using TAO's data, it was found that improvement in WEMWBS score is related to number of times logged into the platform and completing mindfulness meditations. Clients spend about a week and a half between submissions, meeting with therapists and interacting with TAO tools. The more WEMWBS submissions – or the more time spent in treatment – the more improvement was seen in mental wellbeing.

## References

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**Appendix**

*Mean WEMWBS Score Across Time - Full Data*

<i>Submission</i>	<b>M</b>	<b>SD</b>	<b>n</b>
1	39.54	9.39	1180
2	40.51	10.10	1180
3	41.81	9.97	451
4	43.81	10.27	226
5	44.96	9.64	136
6	46.63	9.97	84
7	47.11	11.22	53
8	48.84	10.27	25
9	47.22	12.15	18
10	49.38	10.01	13
11	45.43	10.34	7
12	46.20	5.67	5
13	44.33	10.69	3
14	39.00	NA	1

*Improvement in Scores of Clients Who Completed N Submissions*

<i>N Submissions</i>	<b>Mean</b>	<b>Standard Deviation</b>	<b>Median</b>	<b>Number of Clients</b>
1	0.00	0	0	4777
2	0.79	6.93	0	729
3	1.55	7.46	1	225
4	2.86	7.32	3	90
5	4.48	8.70	3	52
6	4.77	11.10	4	31
7	3.96	8.59	3.5	28
8	7.00	15.49	0	7
9	2.80	16.16	9	5
10	-3.50	14.28	1.5	6
11	10.50	7.78	10.5	2
12	1.00	18.38	1	2
13	20.50	10.61	20.6	2
14	-8.00	NA	-8	1