PHQ-9 Figures

Figure S1 shows the histogram of the 3779 PHQ-9 sum scores received from the participants having minimally sufficient data (n=384) over the course of the 12 week study. It is apparent that the PHQ-9 scores covered the whole range of possible scores (0-27) and that the distribution was resembling a normal distribution, with somewhat higher than expected values at both the extremes.

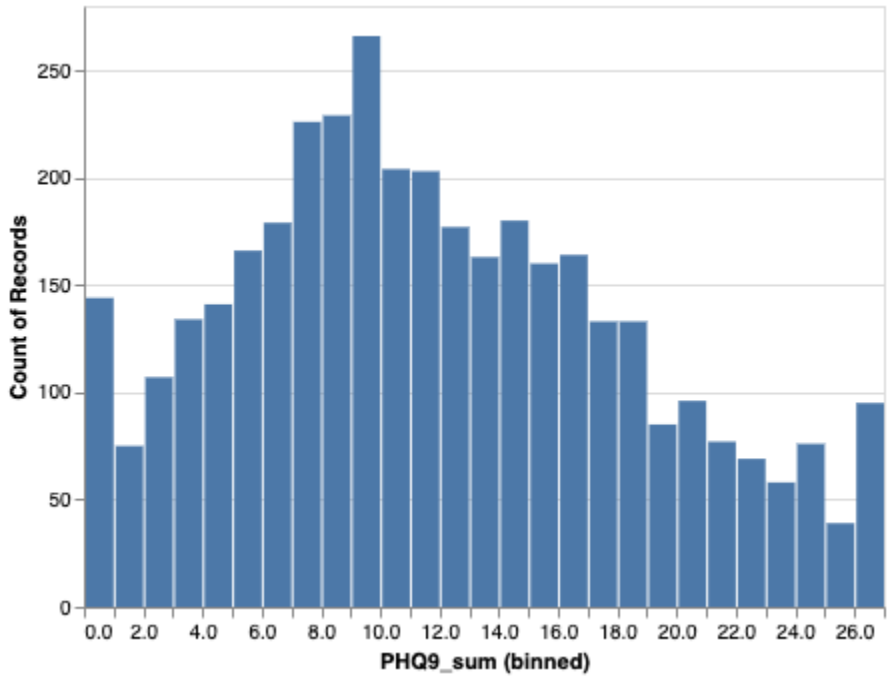
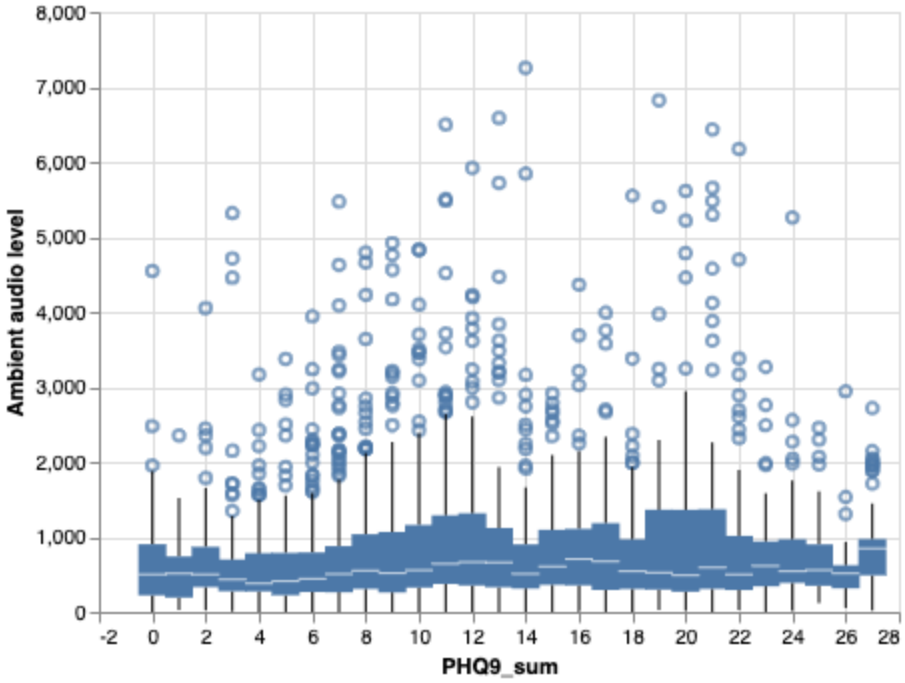
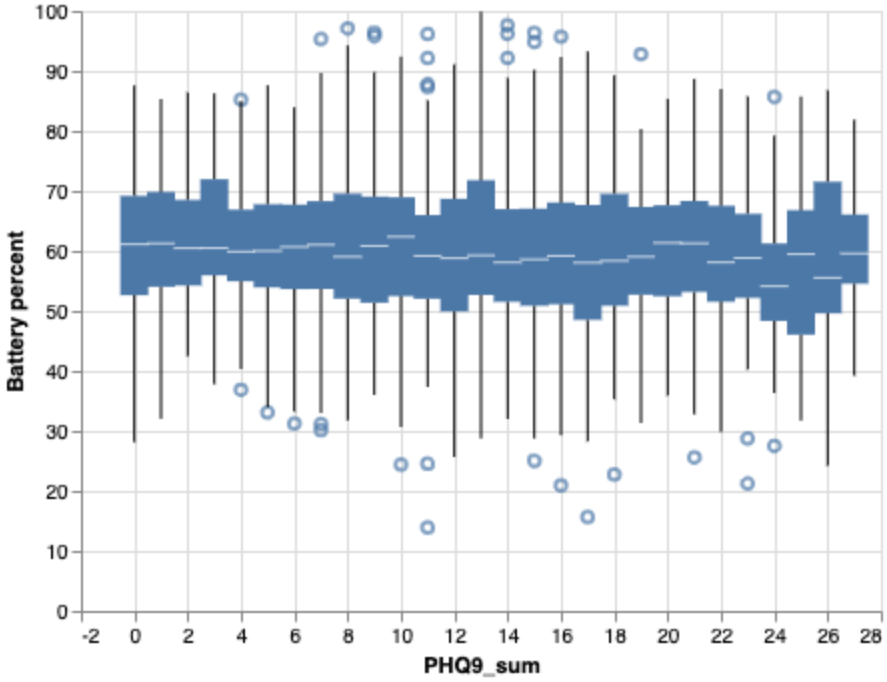
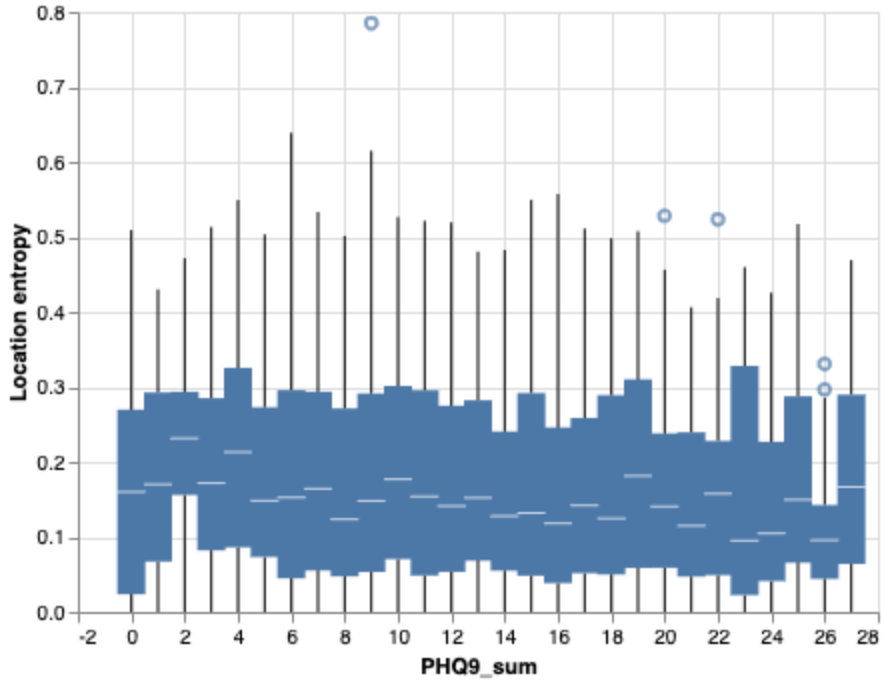


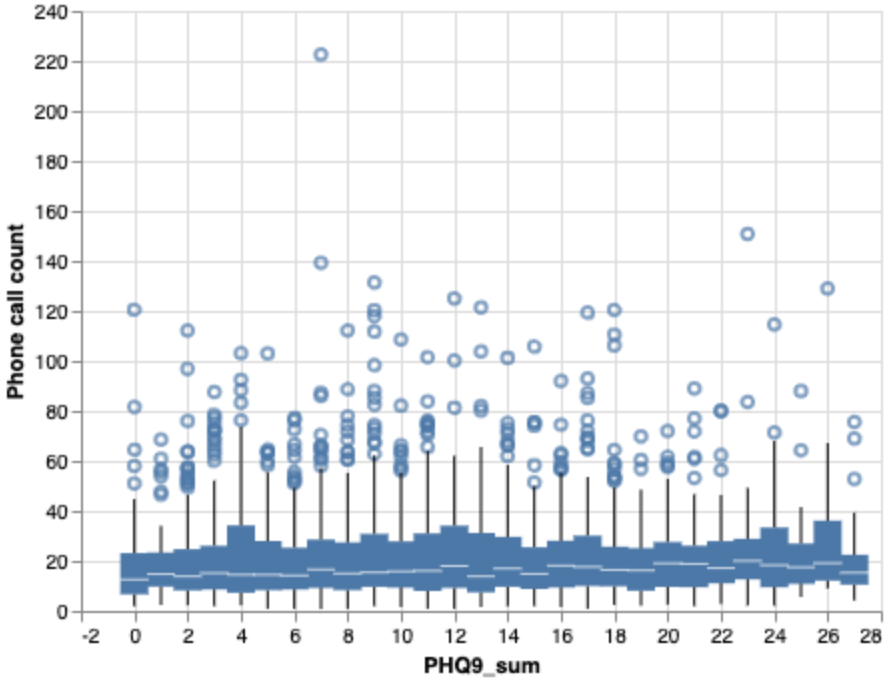
Figure S1: Histogram of the 3779 PHQ-9 sum scores received from 384 unique participants over the course of the 12 week study.

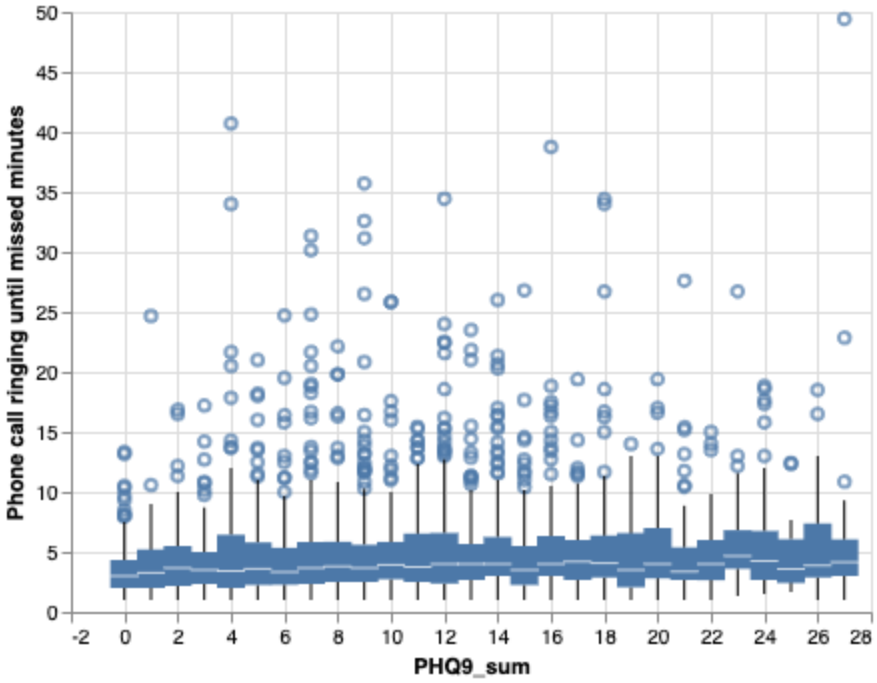
Figure S2 shows the association between PHQ-9 score and the 11 behavioral features that showed a significant ($P \leq 0.001$, adjusted by Benjamini-Hochberg procedure) Spearman's rho correlation with the PHQ-9 score.

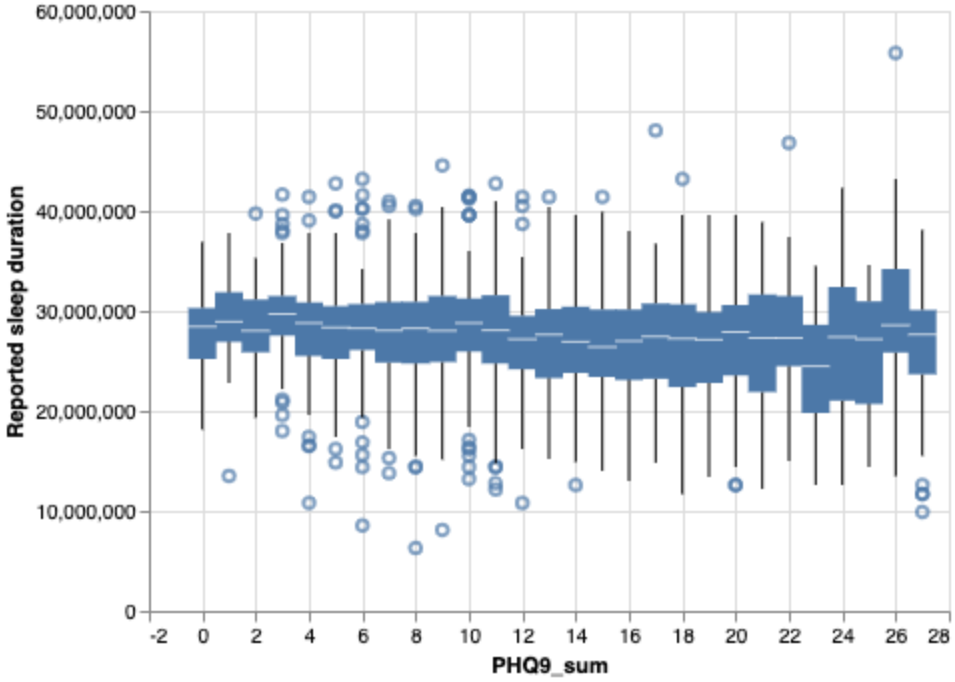

Ambient audio level
8,000
7,000
6,000
5,000
4,000
3,000
2,000
1,000
0
-2 0 2 4 6 8 10 12 14 16 18 20 22 24 26 28
PHQ9_sum

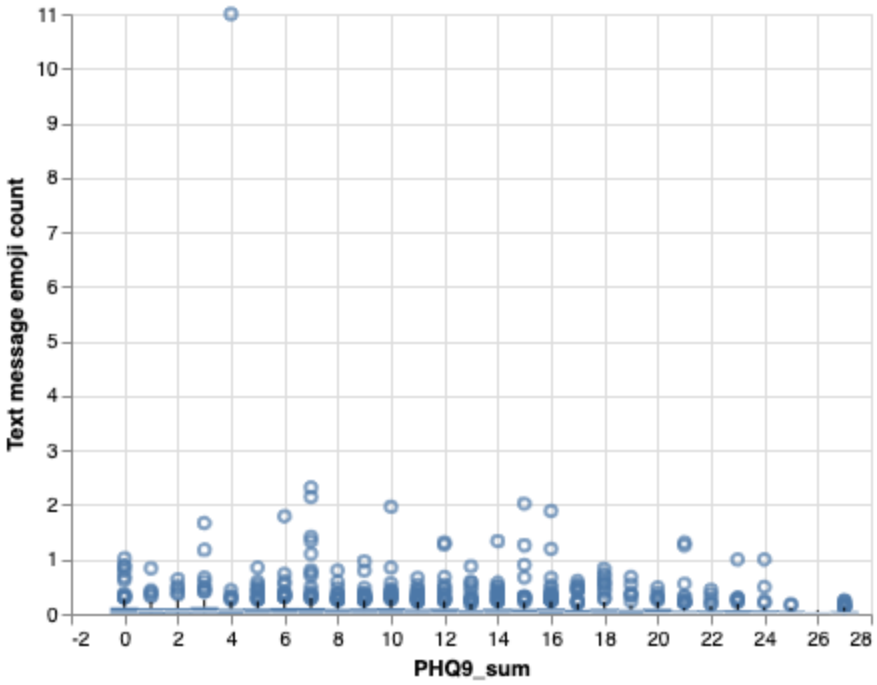

Battery percent
100
90
80
70
60
50
40
30
20
10
0
-2 0 2 4 6 8 10 12 14 16 18 20 22 24 26 28
PHQ9_sum

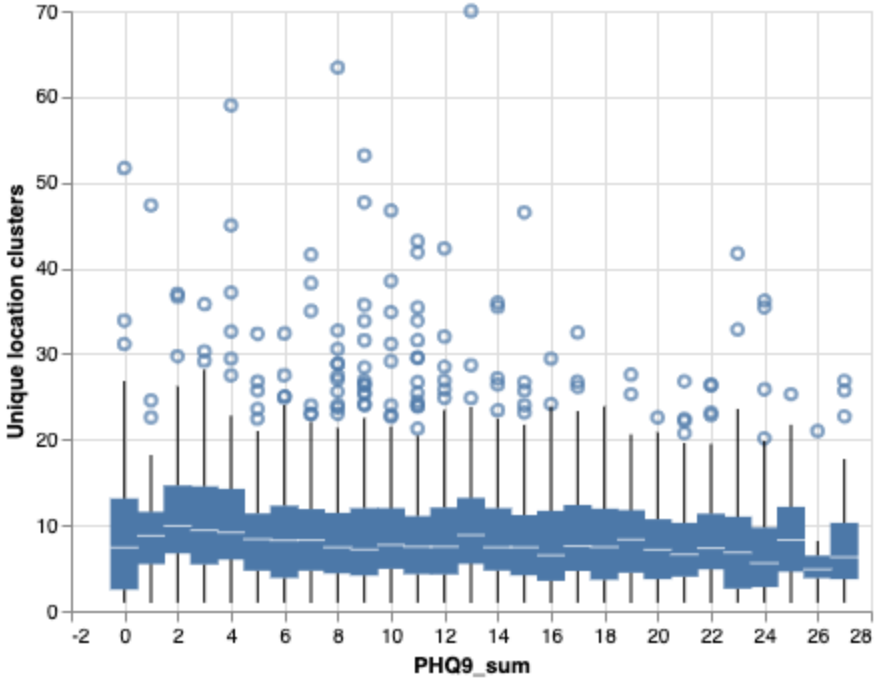

Location entropy
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-2 0 2 4 6 8 10 12 14 16 18 20 22 24 26 28
PHQ9_sum

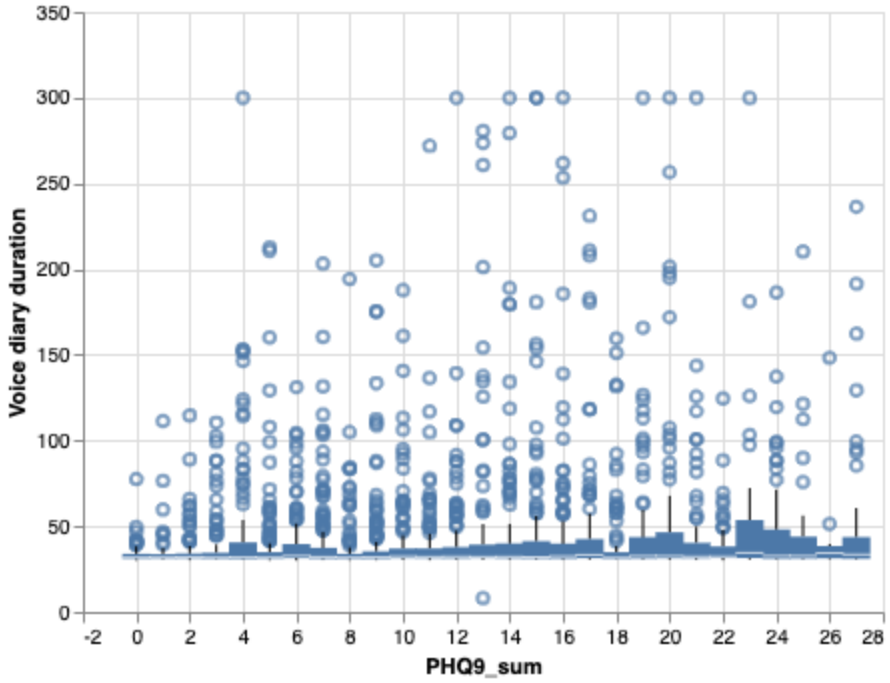

Phone call count
240
220
200
180
160
140
120
100
80
60
40
20
0
-2 0 2 4 6 8 10 12 14 16 18 20 22 24 26 28
PHQ9_sum

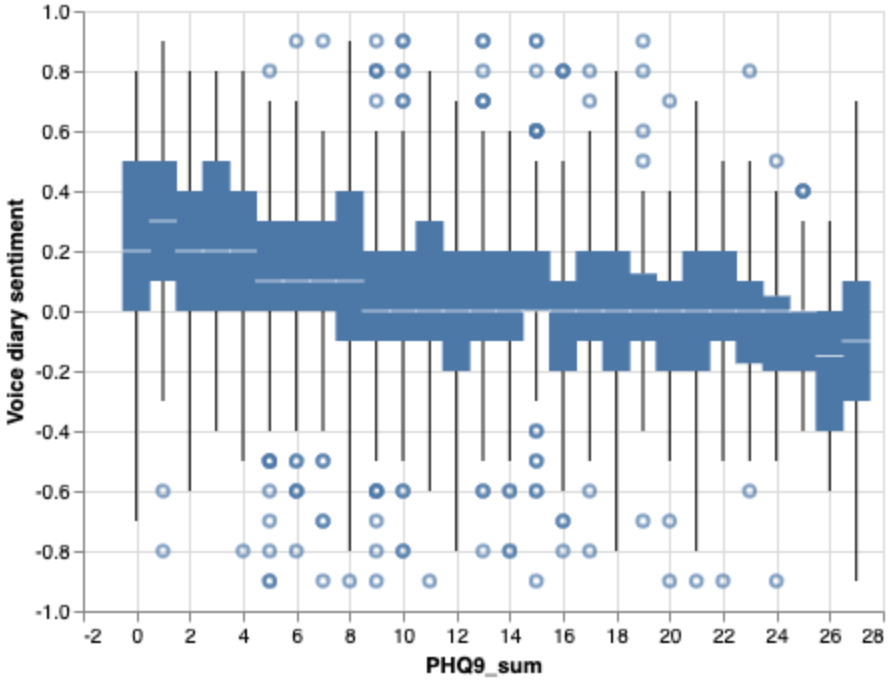

Phone call ringing until missed minutes
50
45
40
35
30
25
20
15
10
5
0
-2
0
2
4
6
8
10
12
14
16
18
20
22
24
26
28
PHQ9_sum


Reported sleep duration
60,000,000
50,000,000
40,000,000
30,000,000
20,000,000
10,000,000
0
-2
0
2
4
6
8
10
12
14
16
18
20
22
24
26
28
PHQ9_sum


Text message emoji count
PHQ9_sum
0
1
2
3
4
5
6
7
8
9
10
11
-2
0
2
4
6
8
10
12
14
16
18
20
22
24
26
28


Unique location clusters
PHQ9_sum
0
10
20
30
40
50
60
70
-2
0
2
4
6
8
10
12
14
16
18
20
22
24
26
28


Voice diary duration
350
300
250
200
150
100
50
0
-2 0 2 4 6 8 10 12 14 16 18 20 22 24 26 28
PHQ9_sum


Voice diary sentiment
1.0
0.8
0.6
0.4
0.2
0.0
-0.2
-0.4
-0.6
-0.8
-1.0
-2 0 2 4 6 8 10 12 14 16 18 20 22 24 26 28
PHQ9_sum

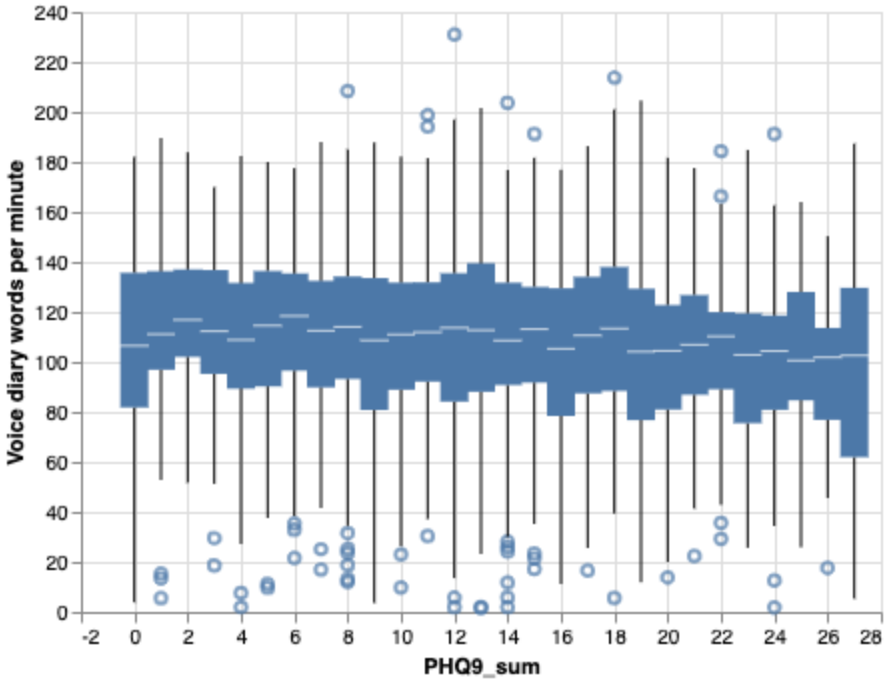


Figure S2: For each of the 11 behavioral features that were significantly ($P \leq 0.001$ adjusted by Benjamini-Hochberg procedure) correlated with PHQ-9 score, we show the PHQ-9 score ranging from 0 to 27 on the x-axis, and the values of the respective behavioral features in a box-and-whiskers format on the y-axis. The white line denotes the median. Circles denote outliers defined as any point more than 1.5 IQRs from the box.