Instructions and Scoring for the 36-item and the 17-item versions of the Protective Behavioral Strategies for Marijuana Scale (PBSM)

The Protective Behavioral Strategies for Marijuana Scale (PBSM) began as a 50-item pool that was reduced to a single-factor 39-item measure in initial exploratory work with 210 college student marijuana users from a single institution. In a follow-up validation study, we used quantitative item analyses, including exploratory and confirmatory factor analyses, item response theory, (IRT) and evaluation of differential item functioning to create an item bank of 36 items and a 17-item short form of the PBSM. These analyses were conducted based on a sample of 2,117 past month marijuana users. The sample consisted of college students (mean age = 20) from 11 different universities in the United States.

The measure is intended for use by researchers and clinicians to assess the strategies that young adults use prior to, during, after, and instead of using marijuana. It is based on principles of harm reduction, which indicate that any step toward reduced or limited use is a step toward minimizing harms from a substance. Higher scores on the PBSM have been shown to be negatively associated with marijuana use and consequences, such that more frequent use of the PBSM strategies by young adults is associated with less frequent marijuana use and fewer marijuana-related consequences. Either format is readily available for use by researchers and clinicians with adequate citation of the source material provided.

36-item version of the PBSM

The 36-item version of the PBSM is a psychometrically sound instrument. Analyses indicated that items in the bank tended to be strongly related to the underlying latent construct that defines protective behavioral strategies for marijuana. The scale has demonstrated high reliability. The advantage of using the 36-item longer format is that it contains a breadth of items that may be of interest depending on one's research or clinical objectives. However, the longer format is subject to potential biases due to gender, race, ethnicity, and state recreational legal status. Researchers and clinicians should be aware of such potential biases with this longer format, which the 17-item shorter version is free of.

To score the 36-item version, sum the responses for each of the 36 items.

17-item version of the PBSM

The 17-item version on the PBSM was developed using IRT to be free from bias on the following four factors:

* Gender (men versus women)
* Race (White versus non-White)
* Ethnicity (Hispanic versus non-Hispanic)
* Recreational marijuana use legal status (at the time of data collection, state recreational marijuana legal vs state recreational marijuana not legal)

IRT-scaled scores were developed for scoring the 17-item version. This is based on the idea of standardized testing that takes the sum-score approach one step further by statistically adjusting and converting raw scores onto a common scale so as to account for differences across different forms. For example, if we wish to implement a shorter version to save time versus a longer version that has more content coverage, the IRT-scaled scores can ensure comparability among these forms with different lengths.

To obtain IRT-scaled scores, sum the responses to the 17 items and then use the table below to quickly convert a summed score to an IRT-scaled score. We provide the table so that the researchers and clinicians do not need to conduct IRT analysis themselves. The scaled scores follow a commonly used T-score metric with a mean of 50 and standard deviation of 10.

Summed score to scaled score conversion table for the 17-item short form (PBSM-17)

Summed score	Scaled score (*T*)	*SE*	Summed score	Scaled score (*T*)	*SE*
17	15	5	60	43	2
18	18	4	61	43	2
19	19	4	62	44	2
20	21	4	63	44	2
21	22	4	64	44	2
22	23	4	65	45	2
23	23	4	66	45	2
24	24	4	67	46	2
25	25	3	68	46	2
26	26	3	69	46	2
27	27	3	70	47	2
28	27	3	71	47	2
29	28	3	72	48	2
30	29	3	73	48	2
31	29	3	74	48	2
32	30	3	75	49	2
33	31	3	76	49	2
34	31	3	77	50	3
35	32	3	78	50	3
36	32	3	79	51	3
37	33	3	80	51	3
38	33	3	81	52	3
39	34	3	82	52	3
40	34	3	83	53	3
41	35	3	84	53	3
42	35	3	85	54	3
43	36	2	86	54	3
44	36	2	87	55	3
45	37	2	88	56	3
46	37	2	89	56	3
47	37	2	90	57	3
48	38	2	91	58	3
49	38	2	92	58	3
50	39	2	93	59	3
51	39	2	94	60	3
52	40	2	95	61	3
53	40	2	96	62	3
54	40	2	97	63	4
55	41	2	98	64	4
56	41	2	99	65	4
57	42	2	100	67	4
58	42	2	101	69	4
59	42	2	102	73	5

Note. The T-score transformation is directly from a latent trait (factor) normal distribution with mean of 0 and variance of 1, which itself has the range from negative infinity to infinity. The probability at the tails is so small that the minimum or the maximum summed score is not going to be exactly at the negative infinity or infinity. Instead, they are estimated at the values of 15 and 73 (after a T transformation) with a rather large SD of 5.