

# Appendix B

## Computation of Scale and Composite Scores for the RAND-36 HSI

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### Scales

#### Raw Scores

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The scale *raw score* is the sum of the IRT weights of the responses to the items contributing to the scale. If *one* item of a scale is missing a response, the IRT weight for that item is estimated by the method described in Appendix A. If *two or more* items of a scale are missing responses, the scale raw score cannot be computed.

The items contributing to each scale and the raw-score range for each scale are provided in Table B.1.

#### T Scores

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For each scale, the raw score is converted to a *T* score. Tables B.2–B.9 provide the *T*-score equivalents of raw scores by scale for the seven normative groups.

Convert the scale raw score to a *T* score:

- Find the specific table for the scale (e.g., Table B.2 is the conversion table for the Physical Functioning Scale).
- In the column for the selected normative group, find the range of raw scores that includes the raw score computed for that scale.
- Read across to either the far-left or far-right column for the *T* score and enter that score on the Hand-Scoring Worksheet.

### Composites

#### Raw Scores

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A composite raw score is based on the *T* scores of the scales contributing to that composite. A composite score cannot be computed if one of the contributing scale scores is missing. That is, if two or more items of any contributing scale are missing responses, that composite score cannot be calculated. In addition, the Global Health Composite score cannot be calculated if either or both scores on the Physical Health Composite and the Mental Health Composite cannot be calculated.

The calculation of each composite raw score consists of multiplying each contributing scale *T* score by its beta weight and adding the resulting products. Note that the beta weight for a scale depends on the composite score being calculated. For example, for the Physical Functioning Scale (PF), the beta weight is .2712 for calculating the Physical Health Composite raw score but .1103 for calculating the Global Health Composite raw score.

The Physical Health Composite (PHC) raw score is calculated as follows:

$$\begin{aligned} &.2712 \times \text{Physical Functioning } T \text{ score} \\ &+ .3487 \times \text{Role Limitations due to Physical Health Problems } T \text{ score} \\ &+ .2755 \times \text{Pain } T \text{ score} \\ &+ .2931 \times \text{General Health Perceptions } T \text{ score} \\ &= \text{Physical Health Composite Raw Score (rounded to nearest whole number)} \end{aligned}$$

The Mental Health Composite (MHC) raw score is calculated as follows:

$$\begin{aligned} &.4333 \times \text{Emotional Well-Being } T \text{ score} \\ &+ .1623 \times \text{Role Limitations due to Emotional Problems } T \text{ score} \\ &+ .3112 \times \text{Social Functioning } T \text{ score} \\ &+ .3136 \times \text{Energy/Fatigue } T \text{ score} \\ &= \text{Mental Health Composite Raw Score (rounded to nearest whole number)} \end{aligned}$$

The Global Health Composite (GHC) raw score is calculated as follows:

$$\begin{aligned} &.1103 \times \text{Physical Functioning } T \text{ score} \\ &+ .1775 \times \text{Role Limitations due to Physical Health Problems } T \text{ score} \\ &+ .1446 \times \text{Pain } T \text{ score} \\ &+ .1621 \times \text{General Health Perceptions } T \text{ score} \\ &+ .2651 \times \text{Emotional Well-Being } T \text{ score} \\ &+ .1013 \times \text{Role Limitations due to Emotional Problems } T \text{ score} \\ &+ .2016 \times \text{Social Functioning } T \text{ score} \\ &+ .1911 \times \text{Energy/Fatigue } T \text{ score} \\ &= \text{Global Health Composite Raw Score (rounded to nearest whole number)} \end{aligned}$$

## ***T* Scores**

For each composite, the raw score is converted to a *T* score. Tables B.10–B.12 provide the *T*-score equivalents of raw scores by composite for the seven normative groups.

Convert the composite raw score to a *T* score:

- Find the appropriate table for the composite:
  - Table B.10: Physical Health Composite
  - Table B.11: Mental Health Composite
  - Table B.12: Global Health Composite
- In the column for the selected normative group, find the composite raw score.
- Read across to either the far-left or far-right column for the *T* score and enter that score on the Hand-Scoring Worksheet.

**Table B.1. Raw-Score Ranges for the Scales**

<b>Scale</b>	<b>Items Contributing to the Scale</b>	<b>Raw-Score Range (Sum of IRT Weights)</b>
<b>Physical Functioning (PF)</b>		
	3	209-564
	4	
	5	
	6	
	7	
	8	
	9	
	10	
	11	
	12	
<b>Role Limitations due to Physical Health Problems (RLP)</b>		
	13	112-288
	14	
	15	
	16	
<b>Pain (PA)</b>		
	21	6-161
	22	
<b>General Health Perceptions (GHP)</b>		
	1	67-434
	33	
	34	
	35	
	36	
<b>Emotional Well-Being (EWB)</b>		
	24	22-361
	25	
	26	
	28	
	30	
<b>Role Limitations due to Emotional Problems (RLE)</b>		
	17	72-195
	18	
	19	
<b>Social Functioning (SF)</b>		
	20	27-188
	32	
<b>Energy/ Fatigue (EF)</b>		
	23	5-354
	27	
	29	
	31	

**Table B.2. T-Score Equivalents of Raw Scores:  
Physical Functioning Scale (PF)**

T Score	Age-Based Sample				Age-Stratified Sample			T Score
	18-24	25-44	45-64	≥65	Overall	Female	Male	
1	209-255	209-214						1
2	256-261	215-220						2
3	262-267	221-226						3
4	268-273	227-233						4
5	274-278	234-239						5
6	279-284	240-246						6
7	285-290	247-252						7
8	291-296	253-258						8
9	297-302	259-265						9
10	303-307	266-271						10
11	308-313	272-278						11
12	314-319	279-284						12
13	320-325	285-290						13
14	326-330	291-297						14
15	331-336	298-303						15
16	337-342	304-309			209		209-216	16
17	343-348	310-316			210-218	209-212	217-224	17
18	349-354	317-322			219-227	213-221	225-233	18
19	355-359	323-329			228-235	222-229	234-241	19
20	360-365	330-335			236-244	230-238	242-250	20
21	366-371	336-341	209-215		245-252	239-246	251-258	21
22	372-377	342-348	216-225		253-261	247-255	259-267	22
23	378-382	349-354	226-234		262-269	256-264	268-275	23
24	383-388	355-361	235-243	209	270-278	265-272	276-284	24
25	389-394	362-367	244-253	210-218	279-287	273-281	285-292	25
26	395-400	368-373	254-262	219-227	288-295	282-290	293-301	26
27	401-406	374-380	263-271	228-236	296-304	291-298	302-309	27
28	407-411	381-386	272-281	237-245	305-312	299-307	310-318	28
29	412-417	387-392	282-290	246-254	313-321	308-316	319-326	29
30	418-423	393-399	291-299	255-263	322-329	317-324	327-335	30
31	424-429	400-405	300-309	264-273	330-338	325-333	336-343	31
32	430-434	406-412	310-318	274-282	339-347	334-342	344-352	32
33	435-440	413-418	319-327	283-291	348-355	343-350	353-360	33
34	441-446	419-424	328-336	292-300	356-364	351-359	361-369	34
35	447-452	425-431	337-346	301-309	365-372	360-368	370-377	35
36	453-458	432-437	347-355	310-318	373-381	369-376	378-386	36
37	459-463	438-444	356-364	319-327	382-390	377-385	387-394	37
38	464-469	445-450	365-374	328-336	391-398	386-393	395-403	38
39	470-475	451-456	375-383	337-346	399-407	394-402	404-411	39

**Table B.2. (Continued)**

T Score	Age-Based Sample				Age-Stratified Sample			T Score
	18-24	25-44	45-64	≥65	Overall	Female	Male	
40	476-481	457-463	384-392	347-355	408-415	403-411	412-420	40
41	482-486	464-469	393-402	356-364	416-424	412-419	421-429	41
42	487-492	470-476	403-411	365-373	425-432	420-428	430-437	42
43	493-498	477-482	412-420	374-382	433-441	429-437	438-446	43
44	499-504	483-488	421-429	383-391	442-450	438-445	447-454	44
45	505-510	489-495	430-439	392-400	451-458	446-454	455-463	45
46	511-515	496-501	440-448	401-409	459-467	455-463	464-471	46
47	516-521	502-507	449-457	410-419	468-475	464-471	472-480	47
48	522-527	508-514	458-467	420-428	476-484	472-480	481-488	48
49	528-533	515-520	468-476	429-437	485-492	481-489	489-497	49
50	534-538	521-527	477-485	438-446	493-501	490-497	498-505	50
51	539-544	528-533	486-495	447-455	502-510	498-506	506-514	51
52	545-550	534-539	496-504	456-464	511-518	507-514	515-522	52
53	551-556	540-546	505-513	465-473	519-527	515-523	523-531	53
54	557-562	547-552	514-522	474-482	528-535	524-532	532-539	54
55	563-564	553-559	523-532	483-491	536-544	533-540	540-548	55
56		560-564	533-541	492-501	545-553	541-549	549-556	56
57			542-550	502-510	554-561	550-558	557-564	57
58			551-560	511-519	562-564	559-564		58
59			561-564	520-528				59
60				529-537				60
61				538-546				61
62				547-555				62
63				556-564				63

**Table B.3. T-Score Equivalents of Raw Scores: Role Limitations due to Physical Health Problems Scale (RLP)**

T Score	Age-Based Sample				Age-Stratified Sample			T Score
	18-24	25-44	45-64	≥65	Overall	Female	Male	
14	112-114							14
15	115-119							15
16	120-123							16
17	124-127							17
18	128-132							18
19	133-136							19
20	137-140							20
21	141-145							21
22	146-149	112						22
23	150-153	113-118						23
24	154-158	119-123						24
25	159-162	124-129					112	25
26	163-166	130-134			112-117	112-117	113-118	26
27	167-171	135-140	112-114		118-123	118-122	119-124	27
28	172-175	141-145	115-120		124-129	123-128	125-130	28
29	176-180	146-150	121-126		130-135	129-134	131-136	29
30	181-184	151-156	127-132		136-141	135-140	137-141	30
31	185-188	157-161	133-138		142-147	141-146	142-147	31
32	189-193	162-167	139-144		148-153	147-152	148-153	32
33	194-197	168-172	145-150	112-117	154-158	153-158	154-159	33
34	198-201	173-177	151-156	118-124	159-164	159-163	160-165	34
35	202-206	178-183	157-162	125-131	165-170	164-169	166-171	35
36	207-210	184-188	163-168	132-138	171-176	170-175	172-177	36
37	211-214	189-194	169-174	139-145	177-182	176-181	178-182	37
38	215-219	195-199	175-180	146-152	183-188	182-187	183-188	38
39	220-223	200-205	181-186	153-159	189-194	188-193	189-194	39
40	224-227	206-210	187-192	160-166	195-199	194-199	195-200	40
41	228-232	211-215	193-198	167-173	200-205	200-205	201-206	41
42	233-236	216-221	199-204	174-180	206-211	206-210	207-212	42
43	237-240	222-226	205-211	181-187	212-217	211-216	213-218	43
44	241-245	227-232	212-217	188-194	218-223	217-222	219-223	44
45	246-249	233-237	218-223	195-201	224-229	223-228	224-229	45
46	250-254	238-243	224-229	202-208	230-235	229-234	230-235	46
47	255-258	244-248	230-235	209-215	236-240	235-240	236-241	47
48	259-262	249-253	236-241	216-222	241-246	241-246	242-247	48
49	263-267	254-259	242-247	223-229	247-252	247-251	248-253	49
50	268-271	260-264	248-253	230-236	253-258	252-257	254-259	50
51	272-275	265-270	254-259	237-243	259-264	258-263	260-265	51

**Table B.3. (Continued)**

T Score	Age-Based Sample				Age-Stratified Sample			T Score
	18-24	25-44	45-64	≥65	Overall	Female	Male	
52	276-280	271-275	260-265	244-251	265-270	264-269	266-270	52
53	281-284	276-281	266-271	252-258	271-276	270-275	271-276	53
54	285-288	282-286	272-277	259-265	277-281	276-281	277-282	54
55		287-288	278-283	266-272	282-287	282-287	283-288	55
56			284-288	273-279	288	288		56
57				280-286				57
58				287-288				58

**Table B.4. T-Score Equivalents of Raw Scores: Pain Scale (PA)**

T Score	Age-Based Sample				Age-Stratified Sample			T Score
	18-24	25-44	45-64	≥65	Overall	Female	Male	
10	6-7							10
11	8-10							11
12	11-13							12
13	14-16							13
14	17-19							14
15	20-23							15
16	24-26	6						16
17	27-29	7-9						17
18	30-32	10-13					6-7	18
19	33-35	14-16					8-11	19
20	36-39	17-20			6-9		12-14	20
21	40-42	21-24			10-13	6-8	15-18	21
22	43-45	25-27	6-8	6-9	14-17	9-12	19-22	22
23	46-48	28-31	9-12	10-13	18-21	13-16	23-26	23
24	49-51	32-34	13-16	14-17	22-25	17-20	27-29	24
25	52-55	35-38	17-20	18-20	26-28	21-24	30-33	25
26	56-58	39-42	21-24	21-24	29-32	25-28	34-37	26
27	59-61	43-45	25-29	25-28	33-36	29-32	38-40	27
28	62-64	46-49	30-33	29-32	37-40	33-36	41-44	28
29	65-67	50-53	34-37	33-36	41-44	37-40	45-48	29
30	68-71	54-56	38-41	37-40	45-48	41-44	49-52	30
31	72-74	57-60	42-45	41-43	49-52	45-48	53-55	31
32	75-77	61-63	46-49	44-47	53-55	49-52	56-59	32
33	78-80	64-67	50-53	48-51	56-59	53-56	60-63	33
34	81-84	68-71	54-57	52-55	60-63	57-60	64-66	34
35	85-87	72-74	58-61	56-59	64-67	61-64	67-70	35
36	88-90	75-78	62-65	60-63	68-71	65-68	71-74	36
37	91-93	79-81	66-69	64-66	72-75	69-72	75-78	37
38	94-96	82-85	70-73	67-70	76-79	73-76	79-81	38
39	97-100	86-89	74-78	71-74	80-82	77-80	82-85	39
40	101-103	90-92	79-82	75-78	83-86	81-84	86-89	40
41	104-106	93-96	83-86	79-82	87-90	85-88	90-92	41
42	107-109	97-100	87-90	83-86	91-94	89-92	93-96	42
43	110-112	101-103	91-94	87-90	95-98	93-96	97-100	43
44	113-116	104-107	95-98	91-93	99-102	97-100	101-104	44
45	117-119	108-110	99-102	94-97	103-106	101-104	105-107	45
46	120-122	111-114	103-106	98-101	107-110	105-108	108-111	46
47	123-125	115-118	107-110	102-105	111-113	109-112	112-115	47
48	126-128	119-121	111-114	106-109	114-117	113-116	116-118	48
49	129-132	122-125	115-118	110-113	118-121	117-120	119-122	49



**Table B.4. (Continued)**

T Score	Age-Based Sample				Age-Stratified Sample			T Score
	18-24	25-44	45-64	≥65	Overall	Female	Male	
50	133-135	126-128	119-122	114-116	122-125	121-124	123-126	50
51	136-138	129-132	123-127	117-120	126-129	125-128	127-130	51
52	139-141	133-136	128-131	121-124	130-133	129-132	131-133	52
53	142-144	137-139	132-135	125-128	134-137	133-136	134-137	53
54	145-148	140-143	136-139	129-132	138-140	137-140	138-141	54
55	149-151	144-147	140-143	133-136	141-144	141-144	142-144	55
56	152-154	148-150	144-147	137-139	145-148	145-148	145-148	56
57	155-157	151-154	148-151	140-143	149-152	149-152	149-152	57
58	158-160	155-157	152-155	144-147	153-156	153-156	153-156	58
59	161	158-161	156-159	148-151	157-160	157-160	157-159	59
60			160-161	152-155	161	161	160-161	60
61				156-159				61
62				160-161				62

**Table B.5. T-Score Equivalents of Raw Scores: General Health Perceptions Scale (GHP)**

T Score	Age-Based Sample				Age-Stratified Sample			T Score
	18-24	25-44	45-64	≥65	Overall	Female	Male	
16	67							16
17	68-75							17
18	76-83	67-71				67-70		18
19	84-91	72-79				71-78		19
20	92-99	80-87		67	67-74	79-86		20
21	100-107	88-95		68-75	75-83	87-94	67-71	21
22	108-115	96-104	67-68	76-83	84-91	95-102	72-80	22
23	116-123	105-112	69-77	84-90	92-99	103-110	81-88	23
24	124-131	113-120	78-85	91-98	100-108	111-118	89-97	24
25	132-139	121-128	86-94	99-106	109-116	119-126	98-105	25
26	140-146	129-136	95-103	107-114	117-124	127-134	106-114	26
27	147-154	137-145	104-112	115-122	125-132	135-142	115-122	27
28	155-162	146-153	113-120	123-129	133-141	143-150	123-131	28
29	163-170	154-161	121-129	130-137	142-149	151-158	132-139	29
30	171-178	162-169	130-138	138-145	150-157	159-166	140-148	30
31	179-186	170-177	139-146	146-153	158-166	167-174	149-157	31
32	187-194	178-186	147-155	154-161	167-174	175-182	158-165	32
33	195-202	187-194	156-164	162-168	175-182	183-190	166-174	33
34	203-210	195-202	165-172	169-176	183-190	191-198	175-182	34
35	211-218	203-210	173-181	177-184	191-199	199-206	183-191	35
36	219-226	211-218	182-190	185-192	200-207	207-214	192-199	36
37	227-234	219-226	191-198	193-199	208-215	215-222	200-208	37
38	235-242	227-235	199-207	200-207	216-223	223-231	209-216	38
39	243-249	236-243	208-216	208-215	224-232	232-239	217-225	39
40	250-257	244-251	217-225	216-223	233-240	240-247	226-233	40
41	258-265	252-259	226-233	224-231	241-248	248-255	234-242	41
42	266-273	260-267	234-242	232-238	249-257	256-263	243-250	42
43	274-281	268-276	243-251	239-246	258-265	264-271	251-259	43
44	282-289	277-284	252-259	247-254	266-273	272-279	260-268	44
45	290-297	285-292	260-268	255-262	274-281	280-287	269-276	45
46	298-305	293-300	269-277	263-270	282-290	288-295	277-285	46
47	306-313	301-308	278-285	271-277	291-298	296-303	286-293	47
48	314-321	309-317	286-294	278-285	299-306	304-311	294-302	48
49	322-329	318-325	295-303	286-293	307-315	312-319	303-310	49
50	330-337	326-333	304-311	294-301	316-323	320-327	311-319	50
51	338-344	334-341	312-320	302-309	324-331	328-335	320-327	51
52	345-352	342-349	321-329	310-316	332-339	336-343	328-336	52
53	353-360	350-358	330-338	317-324	340-348	344-351	337-344	53
54	361-368	359-366	339-346	325-332	349-356	352-359	345-353	54

**Table B.5. (Continued)**

T Score	Age-Based Sample				Age-Stratified Sample			T Score
	18-24	25-44	45-64	≥65	Overall	Female	Male	
55	369-376	367-374	347-355	333-340	357-364	360-367	354-361	55
56	377-384	375-382	356-364	341-347	365-373	368-375	362-370	56
57	385-392	383-390	365-372	348-355	374-381	376-383	371-379	57
58	393-400	391-399	373-381	356-363	382-389	384-391	380-387	58
59	401-408	400-407	382-390	364-371	390-397	392-399	388-396	59
60	409-416	408-415	391-398	372-379	398-406	400-407	397-404	60
61	417-424	416-423	399-407	380-386	407-414	408-415	405-413	61
62	425-432	424-431	408-416	387-394	415-422	416-423	414-421	62
63	433-434	432-434	417-424	395-402	423-431	424-431	422-430	63
64			425-433	403-410	432-434	432-434	431-434	64
65			434	411-418				65
66				419-425				66
67				426-433				67
68				434				68

**Table B.6. T-Score Equivalents of Raw Scores: Emotional Well-Being Scale (EWB)**

T Score	Age-Based Sample				Age-Stratified Sample			T Score
	18-24	25-44	45-64	≥65	Overall	Female	Male	
7				22-24				7
8				25-30				8
9				31-35				9
10				36-41				10
11				42-47				11
12				48-53				12
13				54-59				13
14				60-65				14
15				66-71			22-27	15
16				72-77	22-27	22	28-33	16
17				78-83	28-34	23-29	34-40	17
18	22-23		22-23	84-88	35-41	30-35	41-47	18
19	24-30	22-25	24-30	89-94	42-47	36-42	48-53	19
20	31-37	26-32	31-37	95-100	48-54	43-49	54-60	20
21	38-43	33-39	38-45	101-106	55-61	50-56	61-67	21
22	44-50	40-46	46-52	107-112	62-67	57-62	68-73	22
23	51-57	47-53	53-59	113-118	68-74	63-69	74-80	23
24	58-64	54-60	60-67	119-124	75-81	70-76	81-86	24
25	65-70	61-67	68-74	125-130	82-87	77-82	87-93	25
26	71-77	68-74	75-81	131-135	88-94	83-89	94-100	26
27	78-84	75-81	82-89	136-141	95-101	90-96	101-106	27
28	85-91	82-88	90-96	142-147	102-108	97-103	107-113	28
29	92-97	89-95	97-103	148-153	109-114	104-109	114-120	29
30	98-104	96-102	104-111	154-159	115-121	110-116	121-126	30
31	105-111	103-109	112-118	160-165	122-128	117-123	127-133	31
32	112-118	110-116	119-125	166-171	129-134	124-129	134-139	32
33	119-124	117-123	126-133	172-177	135-141	130-136	140-146	33
34	125-131	124-130	134-140	178-183	142-148	137-143	147-153	34
35	132-138	131-137	141-147	184-188	149-154	144-150	154-159	35
36	139-145	138-144	148-154	189-194	155-161	151-156	160-166	36
37	146-151	145-151	155-162	195-200	162-168	157-163	167-173	37
38	152-158	152-158	163-169	201-206	169-174	164-170	174-179	38
39	159-165	159-165	170-176	207-212	175-181	171-177	180-186	39
40	166-171	166-172	177-184	213-218	182-188	178-183	187-192	40
41	172-178	173-179	185-191	219-224	189-194	184-190	193-199	41
42	179-185	180-186	192-198	225-230	195-201	191-197	200-206	42
43	186-192	187-193	199-206	231-236	202-208	198-203	207-212	43
44	193-198	194-200	207-213	237-241	209-214	204-210	213-219	44

**Table B.6. (Continued)**

T Score	Age-Based Sample				Age-Stratified Sample			T Score
	18-24	25-44	45-64	≥65	Overall	Female	Male	
45	199-205	201-207	214-220	242-247	215-221	211-217	220-226	45
46	206-212	208-214	221-228	248-253	222-228	218-224	227-232	46
47	213-219	215-221	229-235	254-259	229-234	225-230	233-239	47
48	220-225	222-228	236-242	260-265	235-241	231-237	240-245	48
49	226-232	229-235	243-250	266-271	242-248	238-244	246-252	49
50	233-239	236-242	251-257	272-277	249-254	245-250	253-259	50
51	240-246	243-249	258-264	278-283	255-261	251-257	260-265	51
52	247-252	250-256	265-272	284-288	262-268	258-264	266-272	52
53	253-259	257-263	273-279	289-294	269-275	265-271	273-279	53
54	260-266	264-270	280-286	295-300	276-281	272-277	280-285	54
55	267-273	271-277	287-293	301-306	282-288	278-284	286-292	55
56	274-279	278-285	294-301	307-312	289-295	285-291	293-298	56
57	280-286	286-292	302-308	313-318	296-301	292-297	299-305	57
58	287-293	293-299	309-315	319-324	302-308	298-304	306-312	58
59	294-299	300-306	316-323	325-330	309-315	305-311	313-318	59
60	300-306	307-313	324-330	331-336	316-321	312-318	319-325	60
61	307-313	314-320	331-337	337-341	322-328	319-324	326-332	61
62	314-320	321-327	338-345	342-347	329-335	325-331	333-338	62
63	321-326	328-334	346-352	348-353	336-341	332-338	339-345	63
64	327-333	335-341	353-359	354-359	342-348	339-344	346-351	64
65	334-340	342-348	360-361	360-361	349-355	345-351	352-358	65
66	341-347	349-355			356-361	352-358	359-361	66
67	348-353	356-361				359-361		67
68	354-360							68
69	361							69

**Table B.7. T-Score Equivalents of Raw Scores: Role Limitations due to Emotional Problems Scale (RLE)**

T Score	Age-Based Sample				Age-Stratified Sample			T Score
	18-24	25-44	45-64	≥65	Overall	Female	Male	
17							72-73	17
18							74-76	18
19	72-73		72		72-73		77-80	19
20	74-77		73-76		74-77		81-83	20
21	78-80		77-79		78-80	72-74	84-86	21
22	81-84		80-83		81-83	75-78	87-90	22
23	85-87		84-86		84-87	79-81	91-93	23
24	88-90	72-74	87-90		88-90	82-85	94-96	24
25	91-94	75-78	91-93	72-74	91-94	86-89	97-100	25
26	95-97	79-82	94-97	75-79	95-97	90-92	101-103	26
27	98-101	83-86	98-100	80-83	98-101	93-96	104-106	27
28	102-104	87-90	101-104	84-87	102-104	97-99	107-110	28
29	105-108	91-94	105-108	88-91	105-108	100-103	111-113	29
30	109-111	95-98	109-111	92-95	109-111	104-107	114-116	30
31	112-114	99-101	112-115	96-99	112-115	108-110	117-120	31
32	115-118	102-105	116-118	100-103	116-118	111-114	121-123	32
33	119-121	106-109	119-122	104-107	119-122	115-118	124-126	33
34	122-125	110-113	123-125	108-111	123-125	119-121	127-130	34
35	126-128	114-117	126-129	112-115	126-129	122-125	131-133	35
36	129-132	118-121	130-132	116-119	130-132	126-128	134-136	36
37	133-135	122-125	133-136	120-123	133-136	129-132	137-140	37
38	136-139	126-129	137-139	124-128	137-139	133-136	141-143	38
39	140-142	130-133	140-143	129-132	140-143	137-139	144-146	39
40	143-145	134-137	144-146	133-136	144-146	140-143	147-150	40
41	146-149	138-141	147-150	137-140	147-150	144-147	151-153	41
42	150-152	142-145	151-153	141-144	151-153	148-150	154-156	42
43	153-156	146-149	154-157	145-148	154-157	151-154	157-160	43
44	157-159	150-153	158-161	149-152	158-160	155-157	161-163	44
45	160-163	154-157	162-164	153-156	161-164	158-161	164-166	45
46	164-166	158-161	165-168	157-160	165-167	162-165	167-170	46
47	167-170	162-165	169-171	161-164	168-171	166-168	171-173	47
48	171-173	166-168	172-175	165-168	172-174	169-172	174-176	48
49	174-176	169-172	176-178	169-173	175-178	173-175	177-180	49
50	177-180	173-176	179-182	174-177	179-181	176-179	181-183	50
51	181-183	177-180	183-185	178-181	182-185	180-183	184-186	51
52	184-187	181-184	186-189	182-185	186-188	184-186	187-190	52
53	188-190	185-188	190-192	186-189	189-192	187-190	191-193	53
54	191-194	189-192	193-195	190-193	193-195	191-194	194-195	54
55	195	193-195		194-195		195		55

**Table B.8. T-Score Equivalents of Raw Scores: Social Functioning Scale (SF)**

T Score	Age-Based Sample				Age-Stratified Sample			T Score
	18-24	25-44	45-64	≥65	Overall	Female	Male	
7				27				7
8	27			28-31				8
9	28-30			32-34				9
10	31-33			35-37				10
11	34-37			38-41		27		11
12	38-40			42-44	27-28	28-30		12
13	41-43			45-47	29-32	31-34	27-29	13
14	44-47			48-50	33-35	35-37	30-33	14
15	48-50	27		51-54	36-39	38-41	34-37	15
16	51-53	28-31	27-30	55-57	40-43	42-44	38-41	16
17	54-57	32-35	31-34	58-60	44-46	45-48	42-44	17
18	58-60	36-39	35-38	61-63	47-50	49-52	45-48	18
19	61-63	40-43	39-42	64-67	51-53	53-55	49-52	19
20	64-67	44-46	43-46	68-70	54-57	56-59	53-55	20
21	68-70	47-50	47-50	71-73	58-61	60-62	56-59	21
22	71-73	51-54	51-54	74-76	62-64	63-66	60-63	22
23	74-76	55-58	55-58	77-80	65-68	67-69	64-66	23
24	77-80	59-62	59-62	81-83	69-72	70-73	67-70	24
25	81-83	63-66	63-66	84-86	73-75	74-76	71-74	25
26	84-86	67-70	67-70	87-90	76-79	77-80	75-77	26
27	87-90	71-73	71-74	91-93	80-82	81-84	78-81	27
28	91-93	74-77	75-78	94-96	83-86	85-87	82-85	28
29	94-96	78-81	79-81	97-99	87-90	88-91	86-89	29
30	97-100	82-85	82-85	100-103	91-93	92-94	90-92	30
31	101-103	86-89	86-89	104-106	94-97	95-98	93-96	31
32	104-106	90-93	90-93	107-109	98-100	99-101	97-100	32
33	107-110	94-97	94-97	110-112	101-104	102-105	101-103	33
34	111-113	98-100	98-101	113-116	105-108	106-108	104-107	34
35	114-116	101-104	102-105	117-119	109-111	109-112	108-111	35
36	117-120	105-108	106-109	120-122	112-115	113-115	112-114	36
37	121-123	109-112	110-113	123-125	116-119	116-119	115-118	37
38	124-126	113-116	114-117	126-129	120-122	120-123	119-122	38
39	127-130	117-120	118-121	130-132	123-126	124-126	123-125	39
40	131-133	121-124	122-125	133-135	127-129	127-130	126-129	40
41	134-136	125-127	126-129	136-139	130-133	131-133	130-133	41
42	137-140	128-131	130-133	140-142	134-137	134-137	134-137	42
43	141-143	132-135	134-137	143-145	138-140	138-140	138-140	43
44	144-146	136-139	138-140	146-148	141-144	141-144	141-144	44
45	147-150	140-143	141-144	149-152	145-148	145-147	145-148	45
46	151-153	144-147	145-148	153-155	149-151	148-151	149-151	46

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**Table B.8. (Continued)**

T Score	Age-Based Sample				Age-Stratified Sample			T Score
	18-24	25-44	45-64	≥65	Overall	Female	Male	
47	154-156	148-150	149-152	156-158	152-155	152-154	152-155	47
48	157-160	151-154	153-156	159-161	156-158	155-158	156-159	48
49	161-163	155-158	157-160	162-165	159-162	159-162	160-162	49
50	164-166	159-162	161-164	166-168	163-166	163-165	163-166	50
51	167-170	163-166	165-168	169-171	167-169	166-169	167-170	51
52	171-173	167-170	169-172	172-174	170-173	170-172	171-174	52
53	174-176	171-174	173-176	175-178	174-176	173-176	175-177	53
54	177-180	175-177	177-180	179-181	177-180	177-179	178-181	54
55	181-183	178-181	181-184	182-184	181-184	180-183	182-185	55
56	184-186	182-185	185-188	185-188	185-187	184-186	186-188	56
57	187-188	186-188			188	187-188		57



**Table B.9. T-Score Equivalents of Raw Scores: Energy/Fatigue Scale (EF)**

T Score	Age-Based Sample				Age-Stratified Sample			T Score
	18-24	25-44	45-64	≥65	Overall	Female	Male	
25		5-6					5-10	25
26	5-12	7-13		5-12	5-11	5	11-18	26
27	13-19	14-21	5-8	13-20	12-18	6-13	19-26	27
28	20-27	22-28	9-17	21-28	19-26	14-21	27-34	28
29	28-35	29-36	18-25	29-36	27-34	22-28	35-42	29
30	36-43	37-43	26-34	37-45	35-42	29-36	43-49	30
31	44-50	44-51	35-42	46-53	43-50	37-44	50-57	31
32	51-58	52-58	43-50	54-61	51-58	45-52	58-65	32
33	59-66	59-66	51-59	62-69	59-66	53-60	66-73	33
34	67-74	67-73	60-67	70-77	67-74	61-68	74-81	34
35	75-82	74-81	68-75	78-85	75-82	69-75	82-89	35
36	83-89	82-89	76-84	86-93	83-90	76-83	90-97	36
37	90-97	90-96	85-92	94-101	91-97	84-91	98-105	37
38	98-105	97-104	93-101	102-109	98-105	92-99	106-113	38
39	106-113	105-111	102-109	110-118	106-113	100-107	114-121	39
40	114-120	112-119	110-117	119-126	114-121	108-114	122-129	40
41	121-128	120-126	118-126	127-134	122-129	115-122	130-137	41
42	129-136	127-134	127-134	135-142	130-137	123-130	138-144	42
43	137-144	135-141	135-142	143-150	138-145	131-138	145-152	43
44	145-152	142-149	143-151	151-158	146-153	139-146	153-160	44
45	153-159	150-156	152-159	159-166	154-161	147-154	161-168	45
46	160-167	157-164	160-167	167-174	162-168	155-161	169-176	46
47	168-175	165-172	168-176	175-183	169-176	162-169	177-184	47
48	176-183	173-179	177-184	184-191	177-184	170-177	185-192	48
49	184-190	180-187	185-193	192-199	185-192	178-185	193-200	49
50	191-198	188-194	194-201	200-207	193-200	186-193	201-208	50
51	199-206	195-202	202-209	208-215	201-208	194-200	209-216	51
52	207-214	203-209	210-218	216-223	209-216	201-208	217-224	52
53	215-222	210-217	219-226	224-231	217-224	209-216	225-231	53
54	223-229	218-224	227-234	232-239	225-232	217-224	232-239	54
55	230-237	225-232	235-243	240-248	233-240	225-232	240-247	55
56	238-245	233-239	244-251	249-256	241-247	233-240	248-255	56
57	246-253	240-247	252-260	257-264	248-255	241-247	256-263	57
58	254-260	248-254	261-268	265-272	256-263	248-255	264-271	58
59	261-268	255-262	269-276	273-280	264-271	256-263	272-279	59
60	269-276	263-270	277-285	281-288	272-279	264-271	280-287	60
61	277-284	271-277	286-293	289-296	280-287	272-279	288-295	61
62	285-292	278-285	294-301	297-304	288-295	280-287	296-303	62
63	293-299	286-292	302-310	305-312	296-303	288-294	304-311	63
64	300-307	293-300	311-318	313-321	304-311	295-302	312-319	64
65	308-315	301-307	319-327	322-329	312-319	303-310	320-326	65

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**Table B.9. (Continued)**

T Score	Age-Based Sample				Age-Stratified Sample			T Score
	18-24	25-44	45-64	≥65	Overall	Female	Male	
66	316-323	308-315	328-335	330-337	320-326	311-318	327-334	66
67	324-330	316-322	336-343	338-345	327-334	319-326	335-342	67
68	331-338	323-330	344-352	346-353	335-342	327-333	343-350	68
69	339-346	331-337	353-354	354	343-350	334-341	351-354	69
70	347-354	338-345			351-354	342-349		70
71		346-352				350-354		71
72		353-354						72

**Table B.10. T-Score Equivalents of Raw Scores:  
Physical Health Composite (PHC)**

T Score	Age-Based Sample				Age-Stratified Sample			T Score
	18-24	25-44	45-64	≥65	Overall	Female	Male	
1	13-15							1
2	16							2
3	17							3
4	18							4
5	19							5
6	20							6
7	21							7
8	22	18						8
9	—	19						9
10	23	20						10
11	24	21						11
12	25	22						12
13	26	23						13
14	27	24					24	14
15	28	25			25	25	25	15
16	29	26			26	26	26	16
17	30	27			27	27	27	17
18	31	28			28	28	28	18
19	—	29	28		29	29	29	19
20	32	30	29	30	30	30	30	20
21	33	31	30	31	31	31	31	21
22	34	32	31	32	32	32	32	22
23	35	33	32	33	33	33	33	23
24	36	34	33	34	34	34	34	24
25	37	35	34	35	35	35	35	25
26	38	36	35	36	36	36	36	26
27	39	37	36	37	37	37	37	27
28	40	38	37	38	38	38	38	28
29	—	39	38	39	39	39	39	29
30	41	40	39	40	40	40	40	30
31	42	41	40	41	41	41	41	31
32	43	42	41	42	42	42	42	32
33	44	43	42	43	43	43	43	33
34	45	44	43	44	44	44	—	34
35	46	45	44	45	45	45	44	35
36	47	46	45	46	46	46	45	36
37	48	47	46	47	47	47	46	37
38	49	48	47	48	48	48	47	38
39	—	49	48	49	49	49	48	39

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**Table B.10. (Continued)**

T Score	Age-Based Sample				Age-Stratified Sample			T Score
	18-24	25-44	45-64	≥65	Overall	Female	Male	
40	50	50	49	50	50	50	49	40
41	51	51	50	51	51	51	50	41
42	52	52	51	52	52	52	51	42
43	53	53	52	53	53	53	52	43
44	54	54	53	54	54	54	53	44
45	55	55	54	55	55	55	54	45
46	56	—	55	56	56	56	55	46
47	57	56	56	57	57	57	56	47
48	58	57	57	58	58	58	57	48
49	59	58	58	—	59	59	58	49
50	—	59	59	59	60	60	59	50
51	60	60	60	60	61	61	60	51
52	61	61	61	61	62	—	61	52
53	62	62	62	62	63	62	62	53
54	63	63	63	63	64	63	63	54
55	64	64	64-65	64	65	64	64	55
56	65	65	66	65	66	65	65	56
57	66	66	67	66	67	66	66	57
58	67	67	68	67	68	67	67	58
59	68	68	69	68	69	68	68	59
60		69	70	69	70	69	69	60
61			71	70	71	70	70	61
62				71		71		62
63				72				63
64				73				64
65				74				65

**Table B.11. T-Score Equivalents of Raw Scores:  
Mental Health Composite (MHC)**

T Score	Age-Based Sample				Age-Stratified Sample			T Score
	18-24	25-44	45-64	≥65	Overall	Female	Male	
4				17				4
5				18				5
6				19				6
7				20				7
8				21				8
9				22			21	9
10				23			22	10
11	22			24	22	22	23	11
12	23			25	23	23	24	12
13	24			26	24	24	25	13
14	25	25	24	27	25	25	26	14
15	26	26	25	28	26	26	27	15
16	27	27	26	29	27	27	28	16
17	28	28	27	30	28	28	29	17
18	29	29	28	31	29	29	30	18
19	30	30	29	32	30	30	31	19
20	31	31	30	33	31	31	32	20
21	32	32	31	—	32	32	33	21
22	33	33	32	34	33	33	34	22
23	34	34	33	35	34	34	35	23
24	35	35	34	36	35	35	36	24
25	36	36	35	37	36	36	37	25
26	37	37	36	38	37	37	38	26
27	38	38	37-38	39	38	38	39	27
28	39	39	39	40	39	39	40	28
29	40	40	40	41	40	40	41	29
30	41	41	41	42	41	41	42	30
31	42	42	42	43	42	42	43	31
32	43	43	43	44	43	43	44	32
33	44	44	44	45	44	44	45	33
34	45	45	45	46	45	45	—	34
35	46	46	46	47	46	46	46	35
36	47	47	47	48	47	47	47	36
37	48	48	48	49	48	48	48	37
38	49	49	49	50	49	49	49	38
39	50	50	50	51	50	50	50	39
40	51	51	51	52	51	51	51	40
41	52	52	52	—	52	52	52	41
42	53	53	53	53	53	53	53	42

Continued on next page.

**Table B.11. (Continued)**

T Score	Age-Based Sample				Age-Stratified Sample			T Score
	18-24	25-44	45-64	≥65	Overall	Female	Male	
43	54	54	54	54	54	54	54	43
44	55	55	55	55	55	55	55	44
45	56	56	56	56	56	56	56	45
46	57	57	57	57	57	57	57	46
47	58	58	58	58	58	58	58	47
48	59	59	59	59	59	59	59	48
49	60	60	60	60	60	60	60	49
50	61	61	61	61	61	61	61	50
51	62	62	62	62	62	62	62	51
52	63	63	63	63	63	63	63	52
53	64	64	64	64	64	64	64	53
54	65	65	65	65	65	65	65	54
55	66	66	66	66	66	66	66	55
56	67	67	67	67	67	67	67	56
57	68	68	68	68	68	68	68	57
58	69	69	69	69	69	69	69	58
59	70	70	70	70	70	70	70	59
60	71	71	71	—	71	71	71	60
61	72	72	72	71	72	72	72	61
62	73	73	73	72	73	73	73	62
63	74	74	74	73	74	74	74	63
64	75	75	75	74	75	75	75	64
65	76	76	76	75	76	76	76	65
66	77	77		76	77	77		66
67	78	78				78		67
68	79							68

**Table B.12. T-Score Equivalents of Raw Scores:  
Global Health Composite (GHC)**

T Score	Age-Based Sample				Age-Stratified Sample			T Score
	18-24	25-44	45-64	≥65	Overall	Female	Male	
1	20							1
2	21							2
3	22							3
4	23							4
5	24							5
6	25							6
7	26							7
8	27	25			26	26	25	8
9	28	26		26	27	27	26	9
10	29	27		27	28	28	27	10
11	30	28		28	29	29	28	11
12	31	29		29	30	30	29	12
13	32	30	29	30	31	31	30	13
14	33	31	30	31	32	32	31	14
15	34	32	31	32	33	33	32	15
16	35	33	32	33	34	34	33	16
17	—	34	33	34	35	35	34	17
18	36	35	34	35	36	36	35	18
19	37	36	35	36	37	37	36	19
20	38	37	36	37	38	38	37	20
21	39	38	37	38	39	39	38	21
22	40	39	38	39	40	40	39	22
23	41	40	39	40	41	41	40	23
24	42	41	40	41	42	42	41	24
25	43	42	41	42	43	43	42	25
26	44	43	42	43	44	44	43	26
27	45	44	43	44-45	45	45	44	27
28	46	45	44	46	46	46	45	28
29	47	46-47	45-46	47	47	47	46	29
30	48	48	47	48	48	48	47	30
31	49	49	48	49	49	49	48	31
32	50	50	49	50	50	50	49-50	32
33	51	51	50	51	51	51	51	33
34	52	52	51	52	52	52	52	34
35	53	53	52	53	53	53	53	35
36	54	54	53	54	54	54	54	36
37	55	55	54	55	55	55	55	37
38	56	56	55	56	56	56	56	38
39	57	57	56	57	57	57	57	39

*Continued on next page.*

**Table B.12. (Continued)**

T Score	Age-Based Sample				Age-Stratified Sample			T Score
	18-24	25-44	45-64	≥65	Overall	Female	Male	
40	58	58	57	58	58	58	58	40
41	59	59	58	59	59	59	59	41
42	60	60	59	60	60	60	60	42
43	61	61	60	61	61	61	61	43
44	62	62	61	62	62	62	62	44
45	63	63	62	63	63	63	63	45
46	64	64	63	64	64	64	64	46
47	65	65	64	65	65	65	65	47
48	66	66	65-66	66	66	66	66	48
49	67	67	67	67	67	67	67	49
50	68	68	68	68	68	68	68	50
51	69	69	69	69	69	69	69	51
52	70	70	70	70	70	70	70	52
53	71	71	71	71	71	71	71	53
54	72	72	72	72	72	72	72	54
55	73	73	73	73	73	73	73	55
56	74	74	74	74	74	74	74	56
57	75	75	75	75	75	75	75	57
58	76	76	76	76	76	76	76	58
59	—	77	77	77	77	77	77	59
60	77	78	78	78	78	78	78	60
61	78	79	79	79	79	79	79	61
62	79	80	80	80	80	80	80	62
63	80	81	81	81	81	81	81	63
64	81	82	82	82	82	82	82	64
65	82	83	83	83	83	83	83	65
66	83			84		84		66
67				85				67