

Online-Only Supplemental Material

Supplementary Table S1. Expert ranking of T1-DDS-28 item influence and importance and correlations with subscales and total T1-DDS score

		Average influence ranking	Proportion rating item as most important	Subscale correlation	Total scale correlation
Subscale	Item	N=14	N=14	N=2,016	N=2,016
Powerlessness	5	7.79	0.29	0.81	0.72
	9	5.07	0.00	0.66	0.59
	13	7.57	0.14	0.81	0.72
	21	7.36	0.00	0.86	0.78
	25	8.64	0.57	0.88	0.82
Negative social perceptions	4	5.43	0.57	0.79	0.58
	10	5.07	0.29	0.78	0.53
	19	5.07	0.00	0.80	0.62
	24	5.00	0.14	0.83	0.58
Physician distress	7	5.21	0.21	0.81	0.62
	14	5.64	0.21	0.84	0.57
	18	6.00	0.57	0.88	0.57
	26	3.64	0.00	0.87	0.54
Friend/family distress ^a	6	4.29	0.23	0.84	0.54
	11	4.50	0.08	0.83	0.48
	17	4.79	0.23	0.84	0.58
	20	5.57	0.46	0.80	0.52
Hypoglycaemia distress	3	5.71	0.07	0.71	0.44
	15	7.00	0.07	0.81	0.59
	22	5.64	0.00	0.74	0.53
	27	7.86	0.86	0.82	0.66
Management distress	1	8.00	0.71	0.82	0.73
	8	5.64	0.00	0.76	0.59
	12	5.93	0.07	0.73	0.48
	28	7.29	0.21	0.88	0.72
Eating distress	2	5.64	0.29	0.79	0.62
	16	6.64	0.64	0.81	0.71
	23	5.43	0.07	0.89	0.67

NOTE: Bolded items were retained in the DDS-T1-7

^a One response missing for rating of importance.

Supplementary Table S2. Factorial validity and reliability of T1-DDS-7 in samples stratified on age, diabetes duration and education

	Age <50 years	Age ≥50 years	Diabetes duration ≤10 years	Diabetes duration >10 years	Low education (unknown/basic /vocational)	Higher education
	N=796	N=1,220	N=231	N=1,777	N=997	N=1,019
Factorial validity						
Eigenvalue	2.71	2.81	2.86	2.83	2.83	2.82
Proportion of variance	39%	40%	41%	40%	40%	40%
Standardized factor loadings						
Item 1	0.66	0.65	0.68	0.68	0.67	0.69
Item 2	0.50	0.52	0.47	0.53	0.50	0.54
Item 3	0.71	0.72	0.73	0.73	0.71	0.74
Item 4	0.46	0.49	0.52	0.49	0.50	0.48
Item 5	0.46	0.47	0.53	0.45	0.47	0.44
Item 6	0.87	0.84	0.84	0.86	0.90	0.82
Item 7	0.59	0.65	0.63	0.62	0.60	0.63
Reliability						
Cronbach's α (95% CI)	0.81 (0.78 to 0.83)	0.82 (0.80 to 0.84)	0.82 (0.77 to 0.85)	0.82 (0.80 to 0.83)	0.82 (0.80 to 0.84)	0.82 (0.80 to 0.84)

Supplementary Table S3. Correlations between T1-DDS-7, T1-DDS-28, PAID-20, and PAID-5 with other psychosocial measurements

	T1-DDS-7		T1-DDS-28		PAID-20 ^a		PAID-5 ^a	
	r	N	r	N	r	N	r	N
T1-DDS-28	0.95*	2,016	-	-	0.91*	1,332	0.84*	1,332
PAID-20 ^a	0.89*	1,332	0.91*	1,332	-	-	0.95*	1,332
PAID-5 ^a	0.83*	1,332	0.84*	1,332	0.95*	1,332	-	-
WHO-5	-0.56*	2,016	-0.58*	2,016	-0.67*	1,332	-0.65*	1,332
HbA1c ^b	0.24*	1,994	0.24*	1,994	0.25*	1,332	0.23*	1,332

* p < 0.001

^a 684 participants using insulin pumps completed a version of the survey omitting the PAID-20.

^b 22 missing responses

Supplementary Table S4. Correlations coefficients (r) with T1-DDS-7 in samples stratified on age, diabetes duration and education

	Age <50 years	Age ≥50 years	Diabetes duration ≤10 years	Diabetes duration >10 years	Low education (unknown/basic/vocational)	Higher education
	N=796	N=1,220	N=231	N=1,777	N=997	N=1,019
T1-DDS-28						
Powerlessness	0.87*	0.87*	0.87*	0.88*	0.88*	0.88*
Negative social perceptions	0.68*	0.67*	0.65*	0.69*	0.69*	0.69*
Physician distress	0.63*	0.65*	0.66*	0.64*	0.66*	0.63*
Friend/family distress	0.61*	0.61*	0.62*	0.60*	0.61*	0.59*
Hypoglycaemia distress	0.67*	0.71*	0.71*	0.68*	0.67*	0.69*
Management distress	0.69*	0.72*	0.70*	0.72*	0.69*	0.76*
Eating distress	0.78*	0.78*	0.78*	0.80*	0.78*	0.81*
Total distress	0.95*	0.95*	0.95*	0.95*	0.95*	0.95*
PAID-20 ^a	0.89*	0.88*	0.90*	0.89*	0.90*	0.89*
PAID-5 ^a	0.82*	0.81*	0.83*	0.83*	0.83*	0.83*
WHO-5	-0.53*	-0.54*	-0.59*	-0.55*	-0.58*	-0.54*
HbA1c ^b	0.37*	0.12*	0.35*	0.22*	0.27*	0.19*

* p <0.001

^a 684 participants using an insulin pump completed a version of the survey omitting the PAID-20.^b 22 missing responses

Supplementary Table S5. Sensitivity and specificity for T1-DDS-7, T1-DDS-28, PAID-5, and PAID-20, %

Reference	T1-DDS-7 score ≥ 2 N=2,016		T1-DDS-28 score ≥ 2 N=2,016		PAID-5 score $\geq 8^a$ N=1,332		PAID-20 score $\geq 30^a$ N=1,332	
	Sensitivity	Specificity	Sensitivity	Specificity	Sensitivity	Specificity	Sensitivity	Specificity
T1-DDS-28 total score ≥ 2	93	89	-	-	70	93	73	97
T1-DDS-28 with subscale score ≥ 2	53	100	48	100	39	100	38	100
Powerlessness	66	97	61	99	50	99	48	99
Negative social perceptions	83	72	82	77	68	82	67	84
Physician distress	86	70	84	75	62	79	68	83
Friend/family distress	80	70	79	75	61	78	61	80
Hypoglycaemia distress	66	80	63	85	50	87	49	89
Management distress	73	83	71	88	54	88	55	91
Eating distress	71	91	65	92	51	92	51	95
PAID-20 score $\geq 30^a$	94	79	93	86	89	94	-	-
PAID-5 score $\geq 8^a$	88	78	86	84	-	-	85	95

^a 684 participants using an insulin pump completed a version of the survey omitting the PAID-20.