

## Supplementary Material

**Table S1** Descriptive statistics by questionnaire, treatment condition, and sex

Questionnaire	Sex	Condition	n	Baseline (Mean ± SD)	Post (Mean ± SD)	Mean Change
MADRS	Male	Escitalopram	20	27.0 (5.04)	19.4 (8.39)	-7.60
MADRS	Male	Psilocybin	17	27.7 (3.42)	14.1 (10.1)	-13.60
MADRS	Female	Escitalopram	9	26.6 (6.02)	20.8 (9.27)	-5.78
MADRS	Female	Psilocybin	11	27.4 (4.43)	11.2 (10.1)	-16.20
QIDS	Male	Escitalopram	20	15.8 (4.42)	9.90 (5.98)	-5.95
QIDS	Male	Psilocybin	19	14.3 (3.96)	7.53 (5.93)	-6.79
QIDS	Female	Escitalopram	9	17.8 (3.23)	10.4 (5.59)	-7.33
QIDS	Female	Psilocybin	11	14.9 (3.91)	5.73 (6.05)	-9.18
BDI	Male	Escitalopram	20	27.8 (7.15)	17.8 (10.6)	-9.95
BDI	Male	Psilocybin	19	28.1 (6.84)	12.3 (10.9)	-15.80
BDI	Female	Escitalopram	9	30.7 (6.54)	17.9 (12.8)	-12.78
BDI	Female	Psilocybin	11	30.7 (6.60)	7.82 (11.2)	-22.90
SHAPS	Male	Escitalopram	20	6.45 (3.66)	4.55 (4.44)	-1.90
SHAPS	Male	Psilocybin	19	6.21 (4.33)	1.84 (3.47)	-4.37
SHAPS	Female	Escitalopram	9	5.00 (2.55)	1.33 (2.18)	-3.67

SHAPS	Female	Psilocybin	11	6.64 (3.75)	1.09 (2.70)	-5.55
STAI	Male	Escitalopram	20	64.6 (5.92)	56.5 (10.0)	-8.10
STAI	Male	Psilocybin	19	62.9 (7.45)	50.9 (11.0)	-11.90
STAI	Female	Escitalopram	9	67.9 (7.01)	57.0 (14.3)	-10.90
STAI	Female	Psilocybin	11	66.7 (4.08)	40.6 (12.9)	-26.10
WBSI	Male	Escitalopram	19	54.6 (6.53)	52.1 (7.43)	-2.53
WBSI	Male	Psilocybin	18	54.8 (7.06)	45.9 (12.7)	-8.94
WBSI	Female	Escitalopram	9	55.0 (5.27)	51.4 (10.1)	-3.56
WBSI	Female	Psilocybin	10	52.7 (6.07)	42.0 (17.2)	-10.70
WEMWBS	Male	Escitalopram	18	30.3 (5.57)	35.5 (6.48)	5.22
WEMWBS	Male	Psilocybin	17	29.0 (6.47)	42.0 (13.0)	13.00
WEMWBS	Female	Escitalopram	8	30.4 (6.86)	38.1 (10.6)	7.75
WEMWBS	Female	Psilocybin	10	28.1 (5.47)	43.8 (12.7)	15.70

**Note:** Values represent means with standard deviations in parentheses. Change scores were calculated as post-treatment minus baseline. Negative values indicate symptom reduction for MADRS, QIDS, BDI, SHAPS, STAI, and WBSI, whereas positive values indicate improvement for WEMWBS. n indicates the number of participants in each subgroup. All values are based on unadjusted raw questionnaire scores.

**Table S2 Frequentist comparisons of variance and mean difference by treatment condition and time point**

Questionnaire	Condition	Outcome	F (p) Variance Test	t (p) Mean Test	Mean Difference [95% CI]
MADRS	Escitalopram	Baseline	0.70 (0.495)	0.19 (0.850)	0.44 [-4.52, 5.41]
MADRS	Escitalopram	Post	0.82 (0.680)	-0.38 (0.709)	-1.38 [-9.12, 6.37]
MADRS	Escitalopram	Change	0.46 (0.155)	-0.42 (0.683)	-1.82 [-11.34, 7.69]
MADRS	Psilocybin	Baseline	0.60 (0.344)	0.22 (0.830)	0.34 [-2.97, 3.65]
MADRS	Psilocybin	Post	1.00 (0.967)	0.75 (0.462)	2.94 [-5.20, 11.08]
MADRS	Psilocybin	Change	1.03 (0.999)	0.71 (0.484)	2.59 [-4.97, 10.16]
QIDS	Escitalopram	Baseline	1.87 (0.369)	-1.32 (0.201)	-1.93 [-4.97, 1.11]
QIDS	Escitalopram	Post	1.14 (0.891)	-0.24 (0.815)	-0.54 [-5.40, 4.31]
QIDS	Escitalopram	Change	0.77 (0.600)	0.58 (0.569)	1.38 [-3.70, 6.47]
QIDS	Psilocybin	Baseline	1.03 (0.992)	-0.40 (0.694)	-0.59 [-3.69, 2.50]
QIDS	Psilocybin	Post	0.96 (0.900)	0.79 (0.438)	1.80 [-2.94, 6.54]
QIDS	Psilocybin	Change	1.46 (0.551)	1.08 (0.290)	2.39 [-2.17, 6.95]
BDI	Escitalopram	Baseline	1.20 (0.835)	-1.06 (0.304)	-2.87 [-8.57, 2.84]
BDI	Escitalopram	Post	0.69 (0.481)	-0.01 (0.994)	-0.04 [-10.55, 10.47]
BDI	Escitalopram	Change	0.65 (0.412)	0.65 (0.526)	2.83 [-6.54, 12.20]
BDI	Psilocybin	Baseline	1.07 (0.945)	-1.03 (0.312)	-2.62 [-7.88, 2.64]
BDI	Psilocybin	Post	0.96 (0.900)	1.07 (0.296)	4.50 [-4.24, 13.24]
BDI	Psilocybin	Change	1.23 (0.759)	1.62 (0.120)	7.12 [-1.99, 16.24]
SHAPS	Escitalopram	Baseline	2.06 (0.296)	1.23 (0.232)	1.45 [-1.00, 3.90]
SHAPS	Escitalopram	Post	4.15 (0.045*)	<b>2.61 (0.015*)</b>	3.22 [0.69, 5.74]
SHAPS	Escitalopram	Change	1.11 (0.928)	1.39 (0.185)	1.77 [-0.93, 4.47]
SHAPS	Psilocybin	Baseline	1.33 (0.657)	-0.28 (0.780)	-0.43 [-3.53, 2.68]

<b>SHAPS</b>	Psilocybin	Post	1.65 (0.422)	0.66 (0.515)	0.75 [-1.59, 3.09]
<b>SHAPS</b>	Psilocybin	Change	0.98 (0.935)	0.82 (0.422)	1.18 [-1.81, 4.17]
<b>STAI</b>	Escitalopram	Baseline	0.71 (0.518)	-1.22 (0.242)	-3.29 [-9.07, 2.50]
<b>STAI</b>	Escitalopram	Post	0.49 (0.193)	-0.10 (0.926)	-0.50 [-12.00, 11.00]
<b>STAI</b>	Escitalopram	Change	0.65 (0.413)	0.64 (0.535)	2.79 [-6.67, 12.25]
<b>STAI</b>	Psilocybin	Baseline	3.34 (0.056)	-1.82 (0.079)	-3.83 [-8.14, 0.48]
<b>STAI</b>	Psilocybin	Post	0.73 (0.536)	2.23 (0.039*)	10.31 [0.60, 20.02]
<b>STAI</b>	<b>Psilocybin</b>	<b>Change</b>	<b>0.54 (0.241)</b>	<b>2.64 (0.018*)</b>	<b>14.14 [2.80, 25.48]</b>
<b>WBSI</b>	Escitalopram	Baseline	1.54 (0.546)	-0.18 (0.857)	-0.42 [-5.25, 4.41]
<b>WBSI</b>	Escitalopram	Post	0.54 (0.260)	0.16 (0.875)	0.61 [-7.62, 8.84]
<b>WBSI</b>	Escitalopram	Change	1.45 (0.611)	0.32 (0.755)	1.03 [-5.77, 7.83]
<b>WBSI</b>	Psilocybin	Baseline	1.35 (0.664)	0.84 (0.411)	2.13 [-3.15, 7.41]
<b>WBSI</b>	Psilocybin	Post	0.54 (0.268)	0.63 (0.541)	3.89 [-9.40, 17.18]
<b>WBSI</b>	Psilocybin	Change	0.74 (0.562)	0.32 (0.756)	1.76 [-10.00, 13.51]
<b>WEMWBS</b>	Escitalopram	Baseline	0.66 (0.454)	-0.04 (0.973)	0.10 [-6.15, 5.96]
<b>WEMWBS</b>	Escitalopram	Post	0.37 (0.090)	-0.65 (0.534)	-2.63 [-11.75, 6.50]
<b>WEMWBS</b>	Escitalopram	Change	0.31 (0.048*)	-0.57 (0.585)	-2.53 [-12.61, 7.56]
<b>WEMWBS</b>	Psilocybin	Baseline	1.40 (0.620)	0.39 (0.704)	0.90 [-3.95, 5.75]
<b>WEMWBS</b>	Psilocybin	Post	1.04 (0.996)	-0.35 (0.729)	-1.80 [-12.48, 8.88]
<b>WEMWBS</b>	Psilocybin	Change	1.12 (0.900)	-0.50 (0.621)	-2.70 [-13.93, 8.53]

**Note:** F = Levene's test statistic for equality of variances; t = Welch's t-test statistic for mean differences between females and males within each treatment condition; CI = confidence interval. Positive mean differences reflect higher scores for females than males. Asterisks (\*) indicate statistically significant differences at  $p < .05$ .

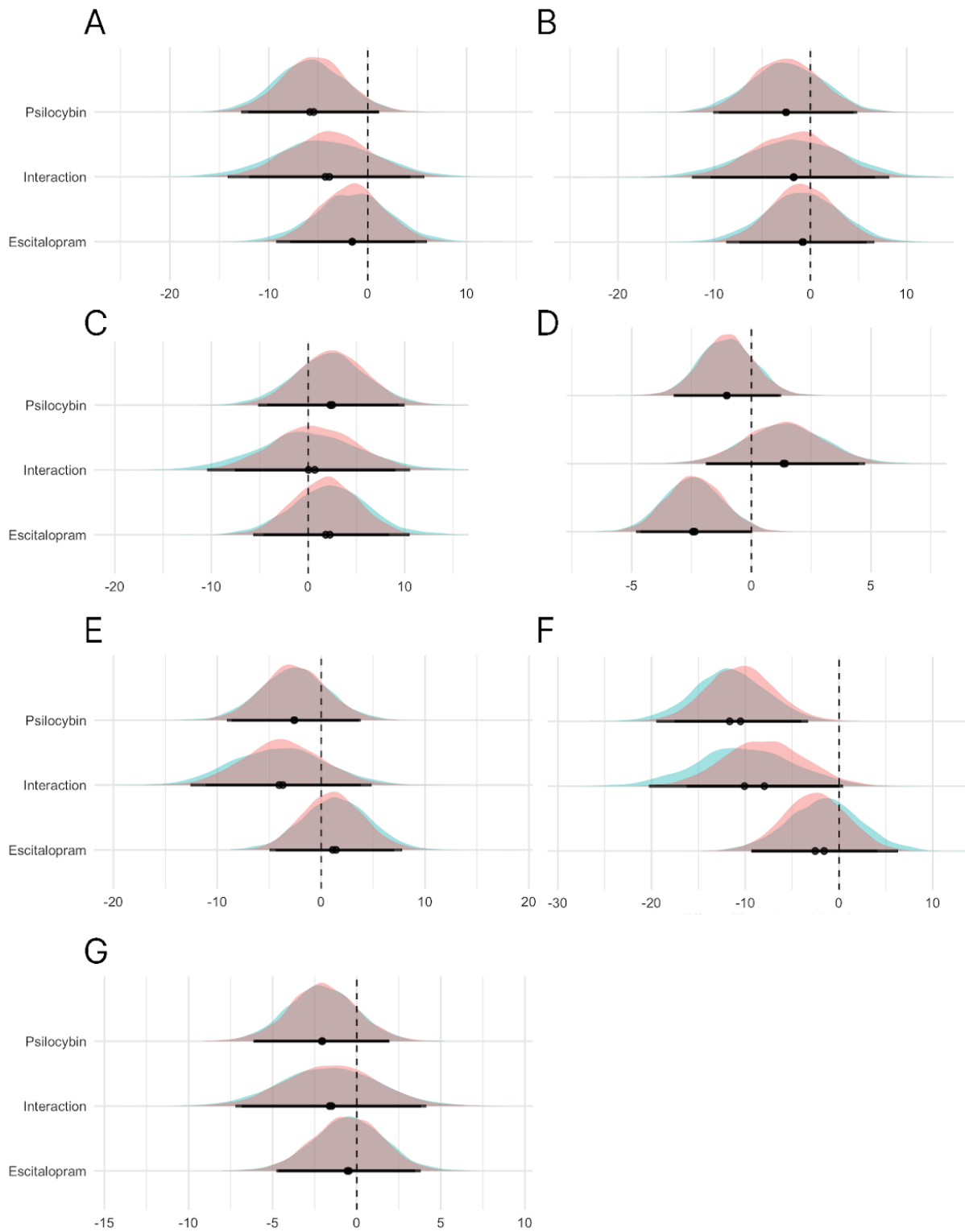
**Table S3** Bayes Factor under original and wide prior specifications

Questionnaire	Comparison	Wide Prior (BF_any / BF_MCID / BF_NI)	Original Prior (BF_any / BF_MCID / BF_NI)	Original Prior Mean [95% CI]
MADRS	Escitalopram	2.02 / 0.351 / 2.35	1.79 / 0.269 / 2.82	1.12 [-4.37, 7.03]
MADRS	Psilocybin	0.270 / 0.299 / 2.76	0.251 / 0.307 / 3.06	-2.57 [-8.63, 3.65]
MADRS	Interaction	0.217 / 0.864 / 1.06	0.202 / 0.796 / 1.20	-3.70 [-11.1, 3.81]
QIDS	Escitalopram	0.665 / 0.142 / 4.14	0.646 / 0.133 / 4.24	-0.55 [-4.65, 3.47]
QIDS	Psilocybin	0.175 / 0.209 / 3.54	0.171 / 0.201 / 3.48	-2.04 [-6.15, 1.90]
QIDS	Interaction	0.415 / 0.316 / 2.49	0.417 / 0.288 / 2.80	-1.49 [-6.83, 3.82]
BDI	Escitalopram	0.521 / 0.356 / 2.34	0.432 / 0.285 / 2.63	-1.58 [-8.27, 5.18]
BDI	Psilocybin	0.0523 / 1.00 / 0.815	0.0496 / 0.894 / 0.867	-5.37 [-12.6, 1.88]
BDI	Interaction	0.263 / 0.900 / 1.03	0.213 / 0.730 / 1.15	-3.79 [-12.3, 4.85]
SHAPS	Escitalopram	0.0217 / 0.562 / 0.997	0.0259 / 0.520 / 0.957	<b>-2.36 [-4.63, 0.00]</b>
SHAPS	Psilocybin	0.239 / 0.0527 / 8.45	0.220 / 0.0493 / 8.17	-1.03 [-3.25, 1.16]
SHAPS	Interaction	4.10 / 0.180 / 3.70	4.05 / 0.164 / 4.00	1.34 [-1.87, 4.49]
STAI	Escitalopram	0.503 / 0.428 / 1.98	0.293 / 0.470 / 1.67	-2.54 [-9.33, 4.07]
STAI	Psilocybin	0.00154 / 20.3 / 0.0214	0.00231 / 13.0 / 0.0620	<b>-10.5 [-17.5, -3.29]</b>
STAI	Interaction	0.0289 / 4.76 / 0.224	0.0342 / 3.10 / 0.293	-7.97 [-16.3, 0.45]
WBSI	Escitalopram	0.731 / 0.345 / 2.15	0.695 / 0.256 / 2.55	-0.76 [-7.38, 5.84]
WBSI	Psilocybin	0.353 / 0.289 / 2.57	0.315 / 0.273 / 2.72	-2.52 [-9.51, 4.49]

WBSI	Interaction	0.614 / 0.587 / 1.51	0.538 / 0.451 / 2.11	-1.76 [-10.4, 6.71]
WEMWBS	Escitalopram	2.57 / 0.518 / 1.71	2.38 / 0.363 / 2.09	1.81 [-4.62, 8.37]
WEMWBS	Psilocybin	2.68 / 0.293 / 2.57	3.20 / 0.279 / 2.64	2.50 [-4.25, 9.38]
WEMWBS	Interaction	0.964 / 0.566 / 1.60	1.24 / 0.438 / 1.96	0.687 [-7.59, 9.04]

**Note:** BF = Bayes factor; BF\_any = evidence for any nonzero effect; BF\_MCID = evidence that the effect exceeds the minimally clinically important difference; BF\_NI = evidence for non-inferiority; CrI = credible interval. Values are presented as Bayes Factor (BF) estimates under two prior specifications: wide prior (more diffuse) and original prior (study-defined). BFs < 1 favor the null; BFs > 1 favor the alternative. Interpretative thresholds: BF < 0.33 = moderate evidence for the null, BF 0.33–3 = weak/inconclusive evidence, BF > 3 = moderate-to-strong evidence for an effect. Bolded rows indicate CrIs that do not include zero, suggesting a potentially meaningful treatment effect.

**Fig. S1** Posterior contrast for sex differences across all clinical questionnaires under sceptical and wide priors



**Notes:** The graph shows posterior distributions for female–male contrasts within psilocybin (top), interaction (middle), and escitalopram (bottom) contrasts for each questionnaire. Panel A-G corresponds to (A) BDI, Beck Depression Inventory; (B) WBSI, White Bear Suppression Inventory; (C) WEMWBS, Warwick–Edinburgh

Mental Well-being Scale; (D) SHAPS, Snaith–Hamilton Pleasure Scale; (E) MADRS, Montgomery–Åsberg Depression Rating Scale; (F) STAI, State–Trait Anxiety Inventory; and (G) QIDS, Quick Inventory of Depressive Symptomatology. Red distributions use the sceptical prior, whereas blue distributions use the wide prior. Points indicate posterior means with 95% credible intervals. The dashed vertical line represents zero (no sex difference). Negative values reflect greater improvement in females. While most estimates overlapped zero, STAI showed robust negative contrasts under psilocybin, indicating larger anxiety reductions in women. The x-axis indicates the effect size (female-male).