

Supplementary Information

Supplement to: Calder A, Hase A & Hasler G. (2024) Effects of Psychoplastogens on Blood Levels of Brain-Derived Neurotrophic Factor (BDNF) in Humans: A Systematic Review and Meta-Analysis.

ID	Authors	Overall	D1	D2	D3	D4	D5	D6	D7
Crossover Design									
1	Becker et al. (2022a)	+	+	+	+	+	!	+	
2	Becker et al. (2022b)	+	+	+	+	+	!	+	
3	Caliman-Fontes et al. (2023)	+	+	+	+	+	!	+	
4	Glue et al. (2020b)	+	+	+	+	+	!	+	
5	Holze et al. (2020)	+	+	+	+	+	!	+	
6	Holze et al. (2021)	+	+	+	+	+	!	+	
7	Holze et al. (2022)	+	+	+	+	+	!	+	
8	Hutten et al. (2021)	-	+	+	-	+	!	+	
9	Ley et al. (2023)	+	+	+	+	+	!	+	
10	Park et al. (2019)	+	+	+	+	+	!	+	
11	Straumann et al. (2023)	+	+	+	+	+	!	+	
12	Vogt et al. (2023)	+	+	+	+	+	!	+	
Parallel Design									
13	Allen et al. (2015)	!	!	!	+	+	!		
14	de Almeida et al. (2019)	-	!	-	-	+	-		
15	Glue et al. (2020a)	+	+	!	+	+	!		
16	Grunebaum et al. (2017)	+	+	!	+	+	!		
17	Grunebaum et al. (2018)	+	+	+	+	+	!		
18	Haile et al. (2014)	!	+	+	!	+	!		
19	Medeiros et al. (2021)	+	+	+	+	+	!		
20	Rocha et al. (2021)	-	+	+	-	+	!		
21	Woelfer et al. (2020)	!	+	+	!	+	!		
Nonrandomized Design									
22	Duncan et al. (2013)	-	-	+	+	+	+	+	-
23	Glue et al. (2020c)	-	-	+	+	+	+	+	!
24	Kang & Vasquez (2021)	-	-	+	+	+	!	+	!
25	Linkovski et al. (2018)	-	-	+	+	+	!	+	!
26	Machado-Vieira et al. (2009)	-	-	+	+	+	+	+	!
27	Rybakowski et al. (2013)	-	-	+	+	+	+	+	!
28	Wang et al. (2021)	-	-	+	+	+	!	+	-
29	Zheng et al. (2021)	-	-	+	+	+	!	+	!

Figure S1. Results of the risk of bias assessment.

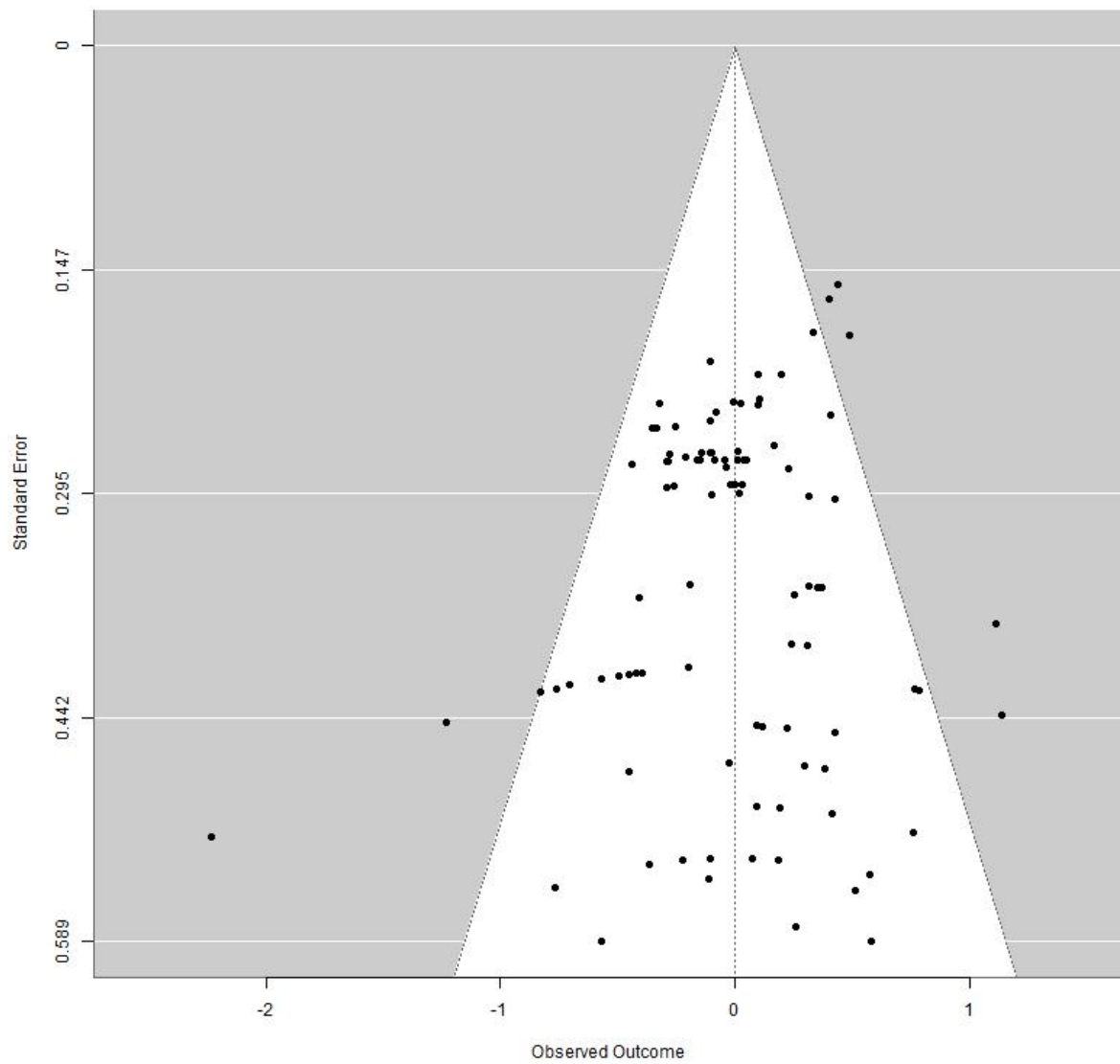


Figure S2. Funnel plot showing effect sizes and standard errors included in the meta-analysis of all psychoplastogens. Egger's test indicated no evidence of publication bias ($p = 0.15$).

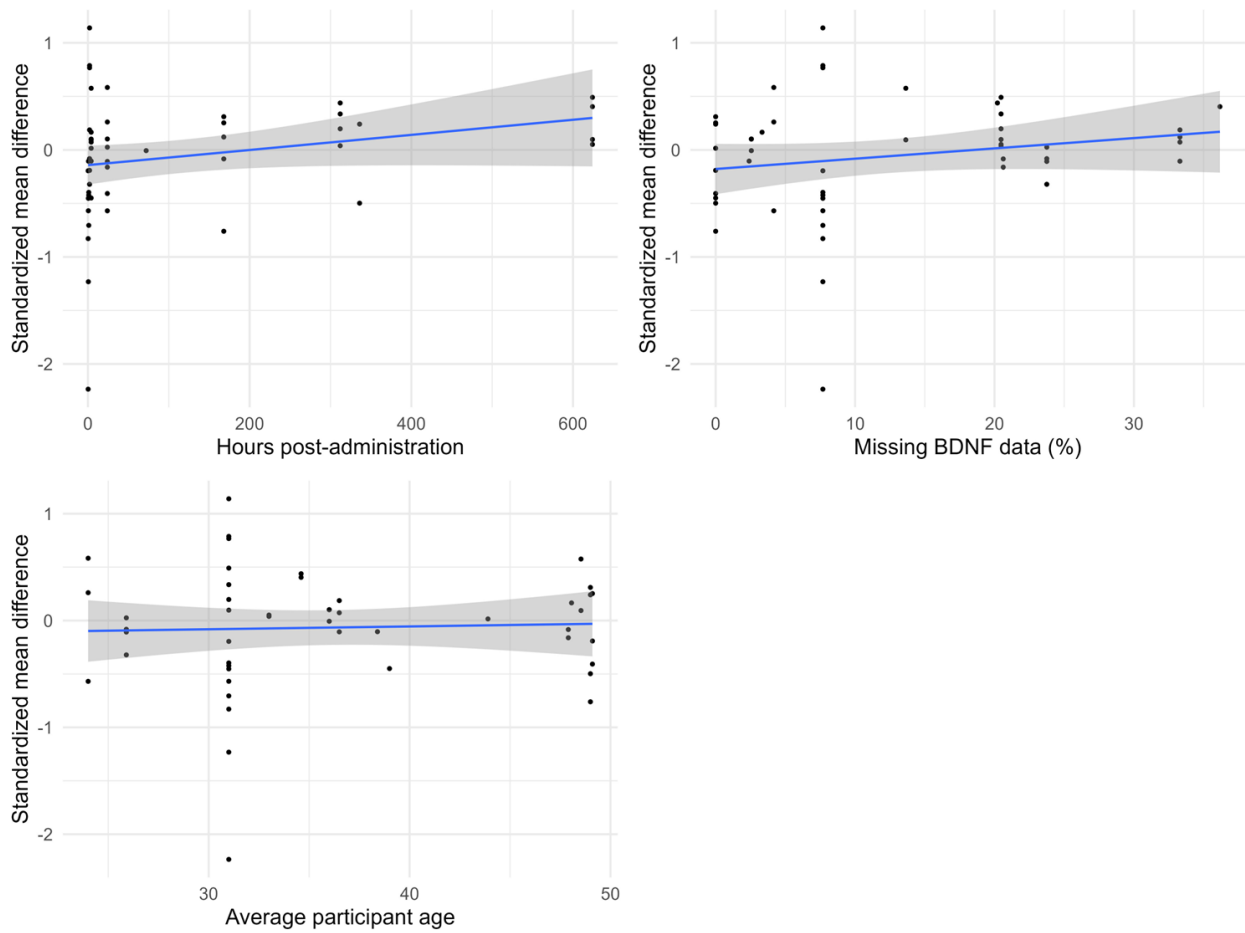


Figure S3. Relationship between effect sizes and the continuous variables of timing, percentage of missing values, and average participant age for studies administering ketamine. Shading shows 95% confidence intervals. The effect of hours post-administration was significant but extremely small (SMD = 0.0007, $p = 0.015$).

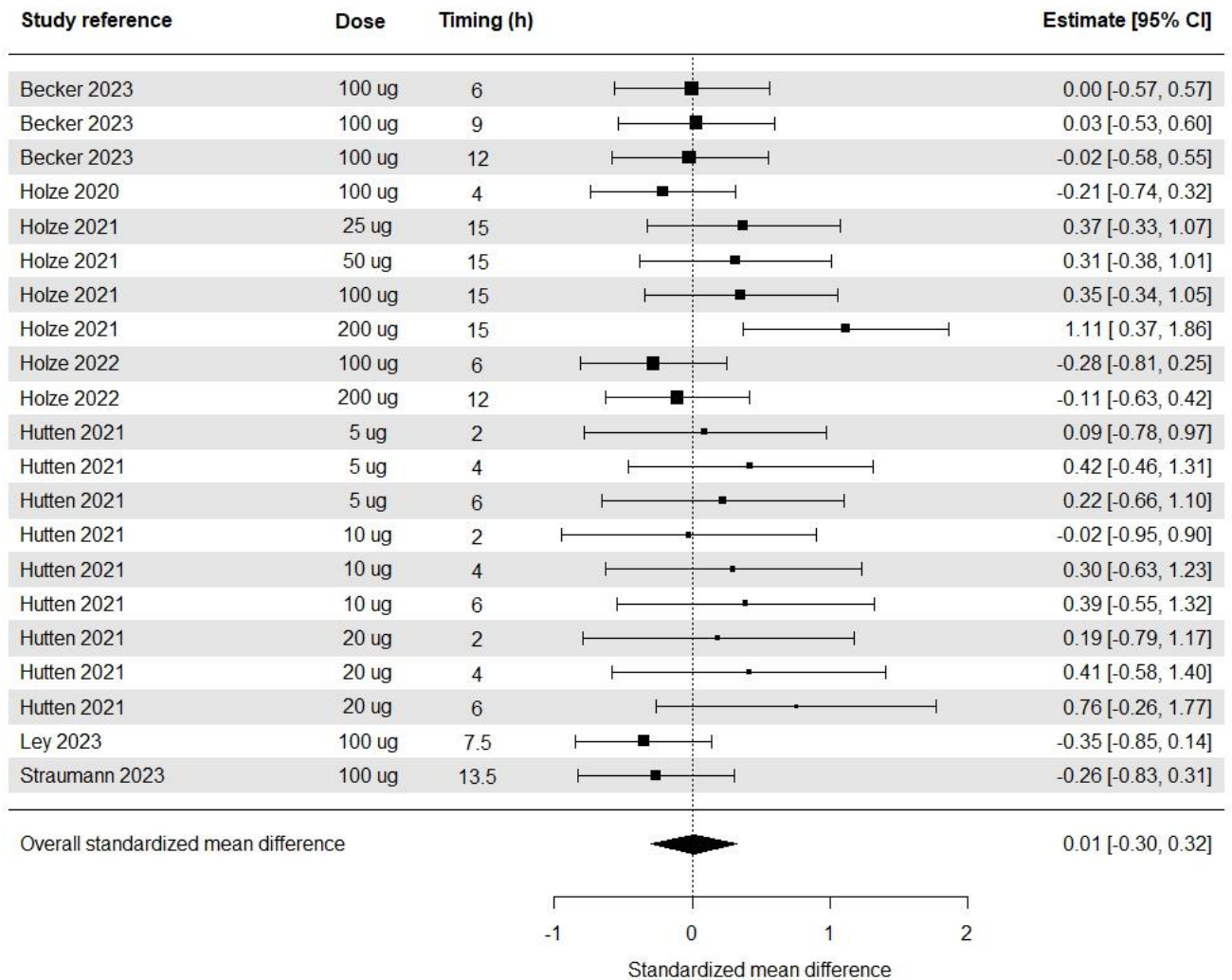


Figure S4. Forest plot showing overall effect size estimates of the change in BDNF after administration of LSD.

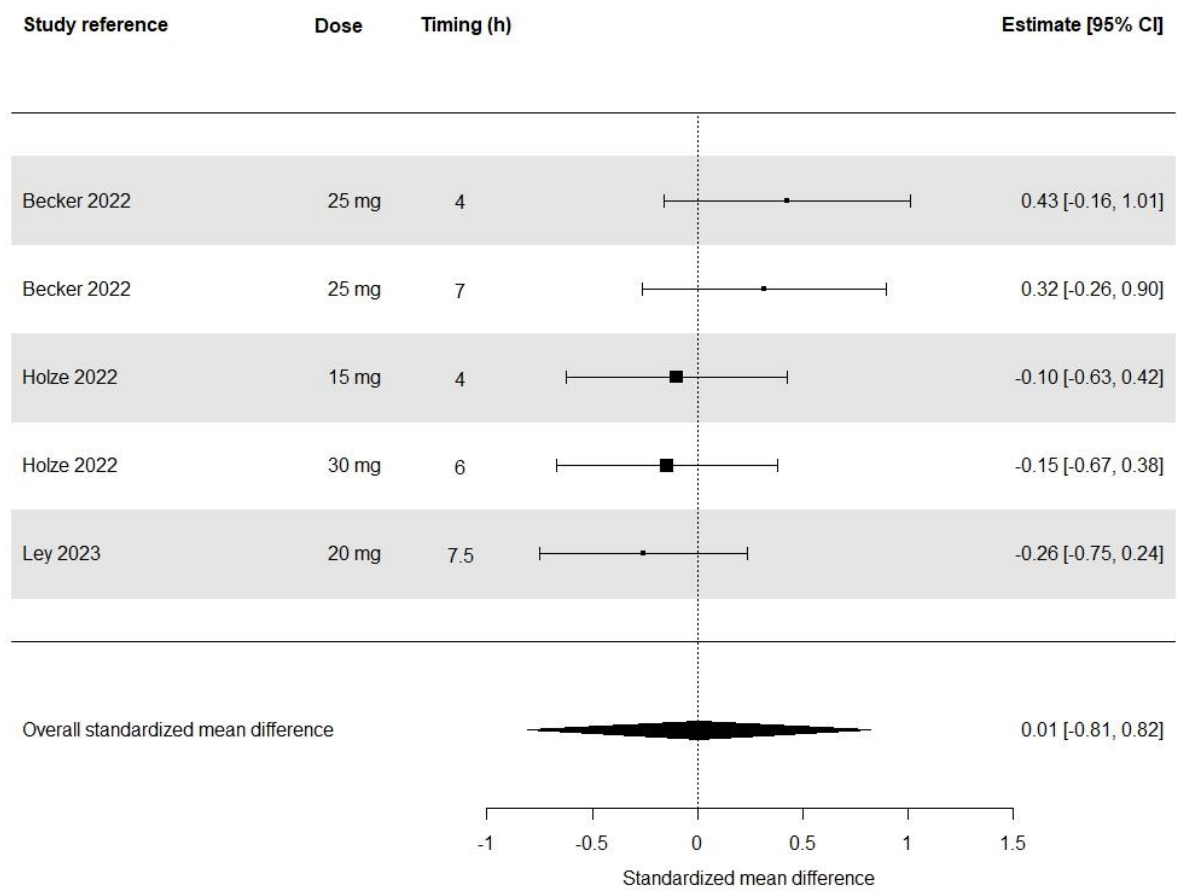


Figure S5. Forest plot showing overall effect size estimates of the change in BDNF after administration of psilocybin.

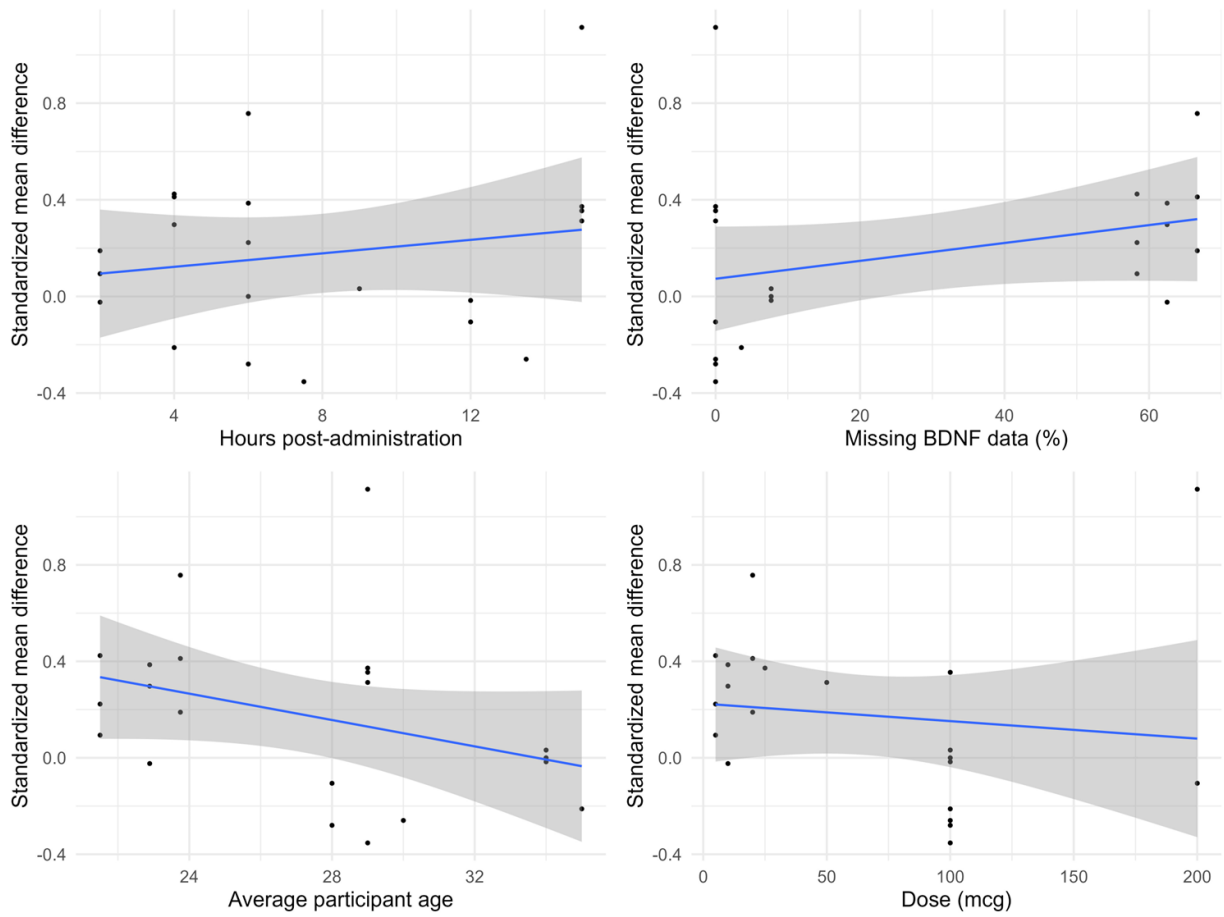


Figure S6. Relationship between effect sizes and the continuous variables of timing, percentage of missing values, average participant age, and dose for studies administering LSD. Shading shows 95% confidence intervals. No moderators showed a significant impact on effect sizes.

Supplementary information on BDNF Immunoassays

Table S1: Available information on sensitivity to mBDNF and proBDNF for immunoassays used in this meta-analysis. Information was taken from manufacturers' websites (accessed 15.07.2024) and from an independent validation study.

Manufacturer	Immunoassay	Sensitivity
Biosensis	Mature BDNF Rapid ELISA kit (no.BEK-2211-2P)	mBDNF with minimal cross-reactivity to proBDNF (Manufacturer's website)
Chemicon International	anti-BDNF sandwich ELISA kit	Not specified
Millipore	ChemiKine Sandwich ELISA (no. CYT306)	Total BDNF ¹ (Manufacturer's website)
MesoScale Discovery	custom assay	Not specified
Promega	BDNF ELISA kit (no. G7610)	Total BDNF ¹ (Manufacturer's website)
R&D Systems	DuoSet ELISA Development Kit (no. DY248)	Total BDNF (Manufacturer's website)
R&D Systems	Total BDNF Quantikine ELISA Kit (no. DBNT00)	Total BDNF (Manufacturer's website)

Supplementary references

1. Polacchini, A., Metelli, G., Francavilla, R., Baj, G., Florean, M., Mascaretti, L. G., & Tongiorgi, E. (2015). A method for reproducible measurements of serum BDNF: comparison of the performance of six commercial assays. *Scientific reports*, 5(1), 17989.