How it feels to be on: LSD, Psilocybin, DMT or Ayahuasca

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BACKGROUND

Serotonergic psychedelics exert profound effects on consciousness. Different questionnaires have been developed to systematically quantify subjective experiences of altered states of consciousness. The Altered States Database[1] contains psychometric data extracted from peer-reviewed articles that used standardized and validated questionnaires. Pooling psychometric data of serotonergic substances like Lysergic Acid Diethylamide (LSD), Psilocybin and N,N-Dimethyltryptamine (DMT) can elucidate common structures of experience and inform experimental or clinical studies on dose-specific effects.

OBJECTIVE

Establishment of dose-response relationships of subjective experiences induced by psilocybin, LSD, DMT or Ayahuasca in healthy human subjects in a controlled setting.

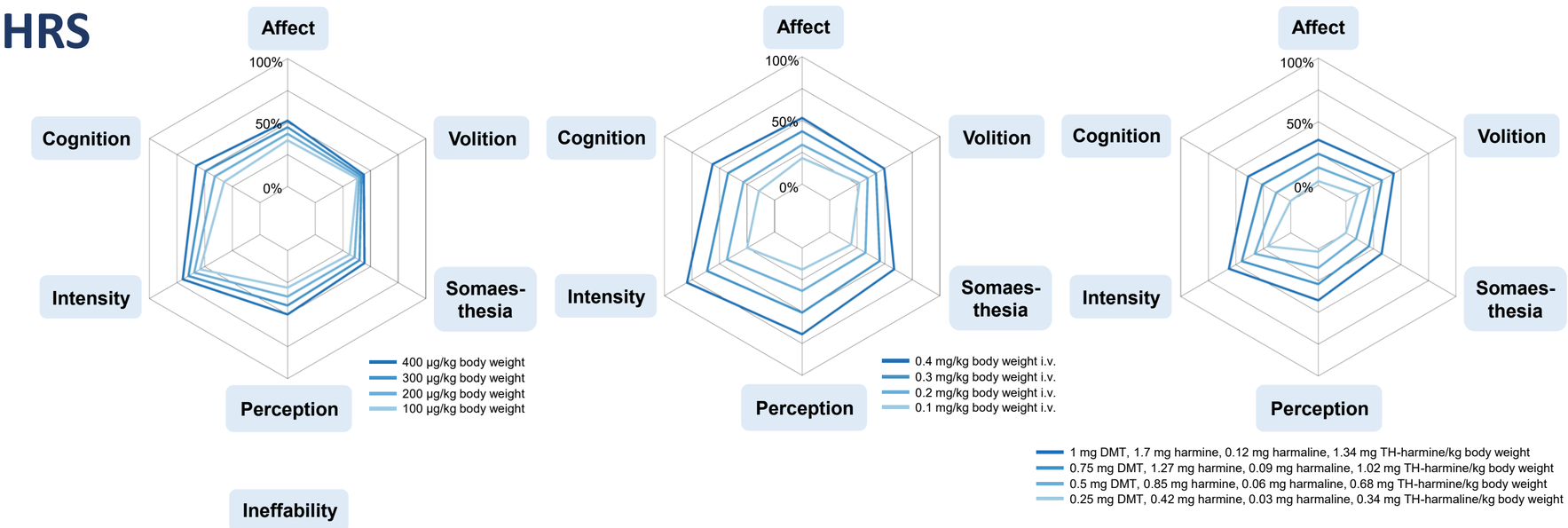
METHOD

- Linear meta-regression analyses with random effects model
- Data assessed with The Altered States of Consciousness Rating Scale (ASC) following a 5-dimensional analysis schema[2] (5D-ASC) and a 11-factorical schema[3] (11-ASC); The Mystical Experience Questionnaire[4] (MEQ30) and The Hallucinogen Rating Scale[5] (HRS)
- Robust Variance Estimation Framework[6] (rho=0.8) with small sample adjustment[7] to account for statistically dependent effect sizes
- Visualization of results with Spiderplots, providing overview of all questionnaire dimensions/subscales by showing the percentage of maximum score for different doses calculated with regression estimates
- Analyses performed with the robumeta package[8] and spiderplots generated with the fmsb package[9] in R version 3.6.2.

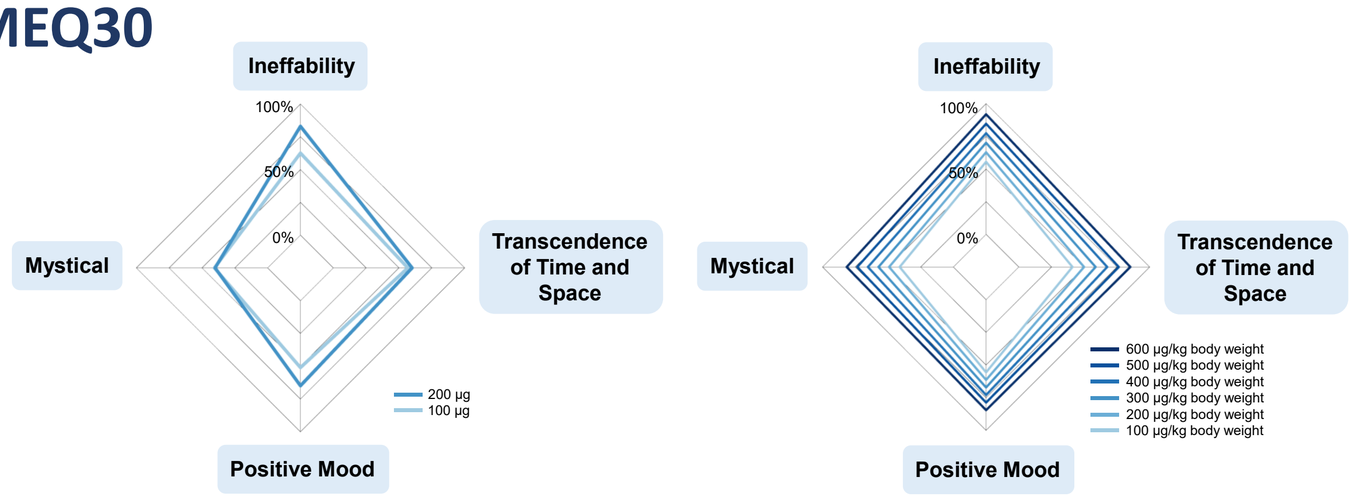
RESULTS

		Studies	Outcomes	Subjects
HRS	Psilocybin	3	8	68
	DMT	2	6	24
	Ayahuasca	6	9	75
MEQ30	Psilocybin	4	11	86
	LSD	2	3	68
5D-ASC	Psilocybin	7	14	114
	LSD	4	5	104
11-ASC	Psilocybin	5	7	120
	LSD	4	5	109

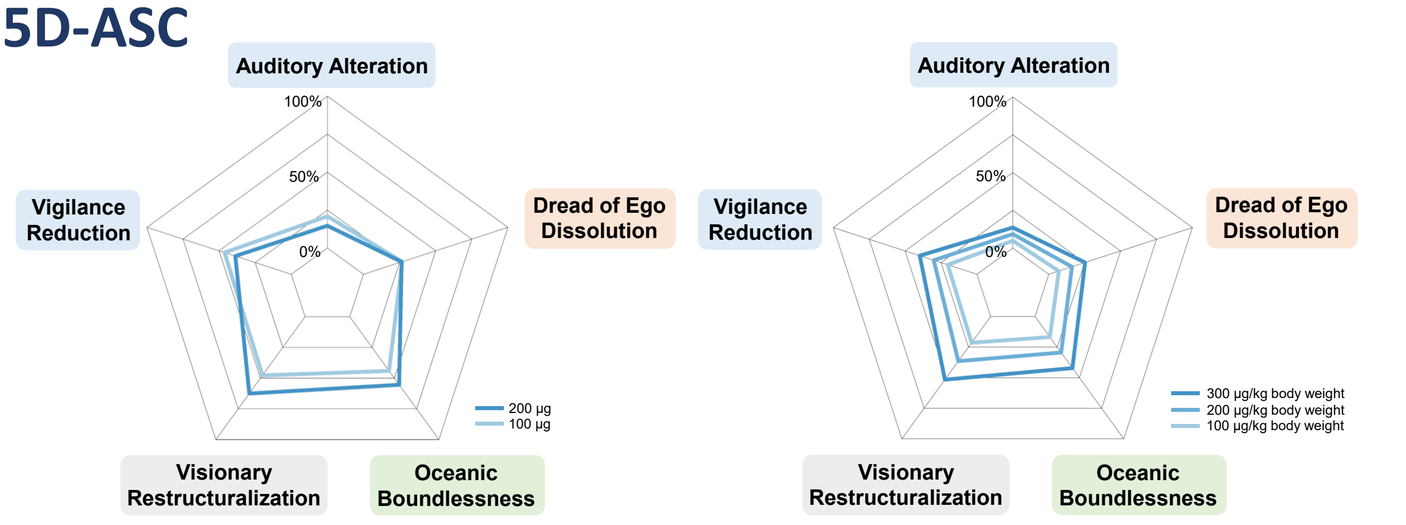
HRS



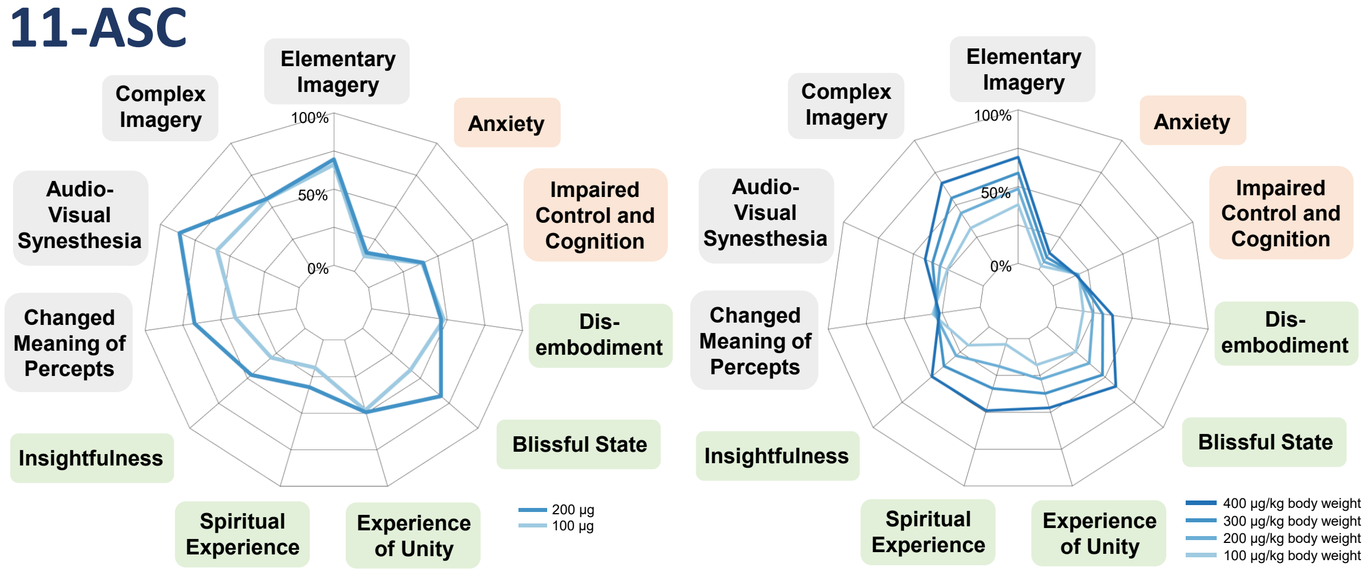
MEQ30



5D-ASC



11-ASC



KEY FINDINGS

- Substance dose correlated positively with ratings on most dimensions/subscales, mainly those referring to perceptual alterations and positively experienced ego dissolution
- Heterogeneity parameters indicate moderate to considerable inconsistencies in dose-responses between studies in most analyses

LIMITATIONS

- Assumption of linear relationships to approximate the dynamic range of a sigmoid function
- Results do not necessarily generalize to recreational use, as our analyses are based on data from controlled laboratory experiments in healthy, highly selected study participants

CONCLUSION

The serotonergic psychedelics psilocybin, LSD, DMT and Ayahuasca intensified almost all characteristics of altered states of consciousness assessed with the given questionnaires. Estimated dose-response relationships allow for inferences on dose-specific subjective effects in future experimental and clinical studies.

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