Title: A research domain criteria (RDoC)-guided dashboard to review psilocybin target domains: a systematic review

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The labeling system:

A labeling system was developed (table S2) to facilitate counting the included outcome measures. Each label indicates the durability (long/short-term measurements) and if applicable, the directionality of the psilocybin-induced alterations e.g., increases in the positive subscale of the positive and negative affect schedule (PANAS) questionnaire that was measured within the twenty-four hours post-intervention was labeled with a superscript "se" which indicates short-term enhancement. Note that in some cases, the directionality of changes was not indicated because two main reasons. First, changes did not have a specific direction e.g., alterations in the neural circuits. Second, the analysis method did not assess a directionality e.g., "experience of unity". In these cases, we used the word "alteration" and its abbreviation "a" to label the findings, e.g., "sa" stands for short-term alteration.

Table S2. Categorization of the extracted measurements for each of the RDoC domains

Allocated labels	**Measurements suggested by research domain criteria (RDoC) framework categorized by the level of analysis (Molecules, Cells, Circuits, Physiology, Behaviors, Self-Reports, and Paradigms)**	**Proxy measurement (suggested by authors) categorized by the level of analysis (Molecules, Cells, Circuits, Physiology, Behaviors, Self-Reports, and Paradigms)**
Positive valence systems (PVS)		

- Enhancement in PVS functioning:
  ○ Short-term enhancement (se)
  ○ Long-term enhancement (le)
	Self-reports
	1. Positive and Negative Affect Schedule (PANAS)
	  ▪ Positive affect scale
		Self-reports
		1. Different versions of altered stated of consciousness questionnaire (ASC/APZ)
		  ▪ Blissful state (increase)
		  ▪ Sense of joy (increase)
		2. Snaith-Hamilton Pleasure Scale (SHAPS) (Reduction in total scores represents enhancement of anhedonia)
		3. Prediction of future life events task (POFLE)
		  ▪ Accuracy of predicting life events (increase)
		  ▪ Pessimism bias (decrease)
		4. Different versions of "monitor rating scale"
		  ▪ Joy/intense happiness (increase)
		5. Different versions of mystical experience questionnaire (M-scale/MEQ30), increases in:
		  ▪ Positive mood
		  ▪ Deeply felt positive mood
		  ▪ Positive affect
		6. Dispositional Positive Emotion Scale (DPES). increases in:
		  ▪ Joy
		  ▪ Content
		  ▪ Pride
		  ▪ Amusement
		7. Reductions in demoralization scale
		8. Reductions in hopelessness and illness scale (HAI)
		9. Life change inventory (LCI), increases in:
		  ▪ Appreciation for life
		  ▪ Quest for meaning
		  ▪ Sense of purpose
		10. Persisting effect questionnaire (PEQ), increases in:
		  ▪ Positive attitudes about life
		  ▪ Positive mood changes
		  ▪ Positive behavior changes
		11. Reductions in self-reported daily consumption (alcohol/smoking) (TLFB)
		12. Smoking /alcohol Abstinence Self-Efficacy (SASE/AASE)
		  ▪ Reductions in temptation to consume
		  ▪ Increase in confidence to abstain
		13. Questionnaire on Smoking Urges (QSU)
		  ▪ Reductions in craving to smoke
		14. Reductions in penn alcohol craving scale (PACS)
		15. Wisconsin Smoking Withdrawal Scale scores (WSWS) (reduction)
		16. Profile of mood states (POMS), increases in:

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		▪ Vigor ▪ Positive mood ▪ Mood disturbance (reduction) 17. Classic drug abuse liability measures: ▪ Euphoria (increase) 18. Satisfaction with life scale(increase) 19. Revised Life Orientation Test (LOT-R) ▪ Optimism (increase) 20. Adjective mood rating scale ▪ Heightened mood ▪ General positive mood/well-being (increase) **Paradigms:** 21. Alcohol deprivation model ▪ Relapse-like drinking (reduction) 22. Novelty suppressed feeding test ▪ The time spent in the feeding zone (increase) 23. Sugar preference test (SPT) 24. Forced swim test (FST) ▪ Immobility (reduced)
Short-term increase in reward seeking (sir)		1. Participants' rating for repeating the drug condition 2. Self-administration paradigms ▪ Intracranial self-stimulation (ICSS)
Negative valence systems (NVS)		
➢ Sif: Short-term increase in "fear" subdomain		**Self-reports** 1. Different versions of altered stated of consciousness questionnaire (ASC/APZ) ▪ Fear/anxiety ▪ Fear of losing control 2. Different versions of monitor ratings during the session ▪ Anxiety or fearfulness 3. Challenging experience questionnaire ▪ Fear 4. Adjective mood rating scale ▪ Anxiety **Paradigms** 5. Behavioral monitoring paradigm ▪ Time spent in the center (increased) ▪ Rearing (reduced) ▪ Holepoking (reduced)
➢ Alterations in the "loss" subdomain ○ Short-term increase in "loss" (sil) ○ Long-term decrease in "loss" (ldl)		**Self-reports** 1. Challenging experience questionnaire ▪ Grief 2. Inventory of Complicated Grief
➢ Decrease in the "sustained threat" subdomain ○ Sdt: Short-term decrease ○ Ldt: long-term decrease	**Self-reports** 1. State-trait and state anxiety questionnaires (STAI) 2. Positive and Negative Affect Schedule (PANAS) ▪ Negative affect scale **Paradigms** 3. Open field test (OFT) 4. Fear conditioning ▪ Extinction of trace fear conditioning ▪ Fear-like behavior ▪ Neurogenesis	**Self-reports** 1. Profile of mood states (POMS) ▪ Tension (decrease) 2. PANAS negative scale (decrease) 3. Death anxiety scale (decrease) **Paradigms** 1. Elevated plus maze (EPM) ▪ The time spent in the open vs. closed arms (increased) 2. Fear conditioning paradigm ▪ Extinction of fear ▪ Freeze-like behavior (reduction)
Cognitive systems		
➢ Alterations in cognitive systems ○ Short-term alteration (sa)	**Physiology:** 1. Event-related potentials during different cognitive tasks ▪ P100	**Self-reports** 1. Different versions of altered stated of consciousness questionnaire (ASC/APZ) ▪ Visual restructuralization

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	▪ P300 ▪ Mismatch negativity (MMN) ▪ N100 ▪ N170	▪ Auditory alteration ▪ Sense of size /space ▪ Sense of time ▪ Perceptions: including visual, ▪ Complex imagery ▪ Elementary imagery ▪ Audiovisual synesthesia ▪ Changed meaning of percepts ▪ Unusual bodily sensations *(somatosensory construct)* 2. Hallucinogen Rating Scale (HRS) ▪ Cognition ▪ Perception ▪ Somaesthesia *(somatosensory construct)* 3. Different versions of mystical-type experience questionnaire (M-scale/MEQ30) ▪ Transcendence of time and space ▪ Timelessness 4. Different versions of participants ratings during the session ▪ Visual effects ▪ Timelessness 5. Participants' descriptions (somatosensory subconstruct) ▪ Senses of "tingling, warmth, rushing" **Paradigms** 6. Binuclear rivalry ▪ Phased duration ▪ Proportion of mixed percepts ▪ Response time 7. Multiple-object Tracking ▪ Attentional tracking performance 8. Spatial working memory 9. Direct and Indirect semantic priming test 10. Penn line orientation test (PLOT) ▪ line orientation **Physiology:** 11. Alterations in the BOLD signals in the following resting state networks acquired by functional magnetic resonance imaging (fMRI) ▪ Auditory network ▪ Visual networks ▪ Attentional network ▪ Sensory networks 12. EEG ▪ Alteration in alpha power in the somatosensory network 13. phMRI ▪ BOLD signal in the visual system
➢ Enhancements in cognitive systems o Short-term enhancements (se) o Long-term enhancements (le)		**Self-reports** 1. Different versions of ASC ▪ Facilitated Recollection 2. Subjective ratings of the recollection experience: ▪ Memory vividness ▪ Emotional intensity ▪ Valence ▪ Visual imagery **Paradigms** 3. Facilitated Imagination Creative thinking ▪ Divergent thinking

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		▪ Convergent thinking
➢ Impairments in cognitive systems ○ Short-term impairments (si)	**Paradigms** 1. Executive function assessments ▪ Digit symbol substitution task (DSST) ▪ Mini-mental status examination (MMSE) 2. Memory assessments ▪ N-back test 3. Stroop task 4. Prepulse inhibition (PPI) and startle 5. Spatial span task 6. AX -Continuous Performance Task	**Paradigms** 1. Frankfurter Aufmerksamkeits-Inventar (FAIR) ▪ Sustained attention ▪ Continuity value 2. Forced choice local and global motion discrimination tasks 3. Covert orienting of attention task (COVAT) ▪ Reaction times 4. Delayed response task (DRT) ▪ Internal time representation ▪ Reaction time 5. Carousel maze ▪ Memory consolidation 6. Morris Water Maze ▪ Reinforced retrieval 7. Memory consolidation
Social processes		
➢ Alteration in "perception & understanding of self" subdomain ○ Short-term alterations (sas) ○ Long-term alterations (las) ○ Long-term enhancements (les)	**Physiology:** 1. Event-related potentials ▪ P300	**Self-reports** 1. Different versions of altered stated of consciousness questionnaire (ASC/APZ) ▪ Disembodiment ▪ Experience of unity ▪ Sense of self /ego ▪ Depersonalization 2. Self-monitoring task performance 3. Hallucinogen Rating Scale (HRS) ▪ Volition 4. Different versions of mystical experience questionnaire (M-scale/MEQ30) ▪ Fusion of your personal self into a larger whole ▪ Unity ▪ Ego loss 5. Persisting effect questionnaire (PEQ) ▪ Positive/negative attitudes about self 6. The revised version of life change inventory scale (LCI-R) ▪ Self-acceptance 7. Ego pathology Inventory (EPI): Ego-identity ▪ Ego-demarcation 8. Ego dissolution Inventory 9. Different versions of participants ratings during the session ▪ Fusion of personal self into a larger whole
➢ Enhancement in "perception & understanding of others" subdomain ○ Short-term enhancement (seo) ○ Long-term enhancement (leo)		**Self-reports** 1. Different versions of altered stated of consciousness questionnaire (ASC/APZ) ▪ Feeling of emotional closeness with your guide or assistant guide ▪ Increased awareness of importance of interpersonal relationships 2. Hallucinogen Rating Scale (HRS) ▪ Understanding others' feelings 3. Dispositional Positive Emotion Scale (DPES) ▪ Compassion 4. Persisting effect questionnaire (PEQ) ▪ Altruistic/positive social effects 5. The revised version of life change inventory scale (LCI-R)

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		▪ Concern for others **Paradigms** 6. Multifaceted empathy task (MET) ▪ Explicit emotional empathy ▪ Implicit emotional empathy ▪ Cognitive empathy
➢ Alteration in "social communication" subdomain o Short-term alteration (sasc) o Long-term alteration (lasc)	**Physiology** 1. Task-based EEG acquisitions during different versions of emotional face recognition ▪ Event-related potentials (ERP) i. N170	**Paradigms** 1. Different versions of emotional face recognition/go-no go tasks/emotional conflict Stroop task ▪ Reactivity to valence-loaded faces ▪ Reaction time 2. WHO brief-version questionnaire ▪ Social relationships **Physiology** 3. Task-based fMRI acquisitions during different versions of emotional face recognition ▪ BOLD signals 4. Task-based EEG acquisitions during different versions of emotional face recognition
➢ Short-term enhancement in "affiliation and attachment " subdomain (sea)	**Self-report** 1. Cyberball task ▪ Post-task questionnaire: reduced **Physiology** 2. Task-based fMRI acquisitions during cyberball task	**Paradigms** 1. Ultimatum game ▪ Reduced rejection offers 2. Moral dilemma task (MDT)
Arousal and regulatory systems		
➢ Short-term impaired arousal (sia)	**Paradigms:** 1. Psychomotor vigilance task ▪ Increased reaction time ▪ Reduced sensitivity indices	**Self-reports** 1. Different versions of altered stated of consciousness questionnaire (ASC/APZ) ▪ Vigilance reduction 2. Different versions of "monitor rating scale": ▪ Unresponsiveness to questions ▪ Stimulation/arousal ▪ Sleepiness/sedation ▪ Physical discomfort ▪ Restlessness/fidgety 3. Adjective mood rating scale ▪ Tiredness ▪ Dazed state ▪ General inactivity (inactivation, tiredness and drowsiness)
➢ Short-term alteration in "sleep-wakefulness" subdomain (ssw)	**Physiology** 1. Rapid eye movement (REM) sleep 2. Non-rapid eye movement (NREM) sleep 3. Slow-wave activity (SWA)	
Sensorimotor systems		
➢ Short-term alteration (sa)	**Physiology** 1. Magnetoencephalography ▪ Spectral power of motor network 2. Pharmacological MRI (phMRI) ▪ Changes in local field potential and cerebral blood flow of the somatosensory cortex	**Self-reports** 1. Different types of motor task

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➢ Short-term impairment in" motor actions" subdomain (sim)		1. Different versions of "monitor rating scale" ▪ Increased spontaneous motor activity **Paradigms** 2. Psychomotor performance using the motor praxis task (retarded) 3. Sensorimotor temporal synchronization ▪ The ability to reproduce interval length (impaired) ▪ Synchronize motor response (impaired) ▪ Adjusting the personal tapping tempo (impaired) 4. Different methods to monitor the locomotor activity of animal models e.g., in the open field test ▪ Immobility (increased) ▪ Flat-body posture (increased) ▪ Trajectory length (reduced) ▪ General locomotor activity (impaired) ▪ Spatial coefficient (decreased)
General labels		
Miscellaneous (m)* Non-significant (NS)		

phMRI: pharmacological magnetic resonance imaging

BOLD signal: Blood-oxygen-level signal

** Outcome measures were labeled miscellaneous (m) if the findings did not fit other categories. Generally, this label informs cases of associations between parameters or molecular mechanisms.*