

Hidden Laws of Mental State Dynamics in PTSD

概要

Severity scores from PTSD questionnaires do not account for heterogeneity in treatment response. A low-dimensional space shared across patients and within a patient over time captures symptom dynamics beyond a single severity score. This work maps changes in PTSD subtypes over time and assesses how this space generalizes across questionnaires and disorders.

特徴

- Earlier work from our group applied PCA to the IES-R across nine heterogeneous cohorts: the first axis reflected overall symptom severity, a second independent axis separated symptom clusters — consistently across cohorts.
- Tracking symptom dynamics across timepoints, we found that PTSD subtype classifications can change within individuals over time, suggesting that subtype is not always static, and these transitions occur within the low-dimensional symptom space.
- The same symptom-cluster structure — over- versus under-modulated emotional response — appears beyond the IES-R, across instruments.

今後の展開

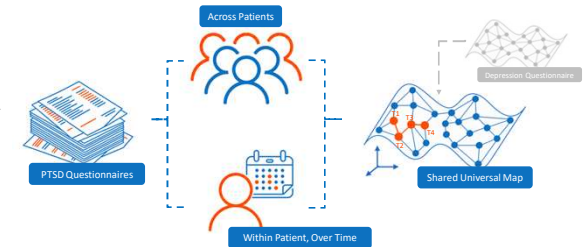
- Future directions include establishing a shared space across patients, disorders, and instruments. This could enable cross-diagnostic research and support state-dependent personalized treatment.

テーマ「京都府と共に創るいのちの未来」との関連

- An instrument-independent symptom space, shared across and within patients, can improve the way psychiatric care is provided.

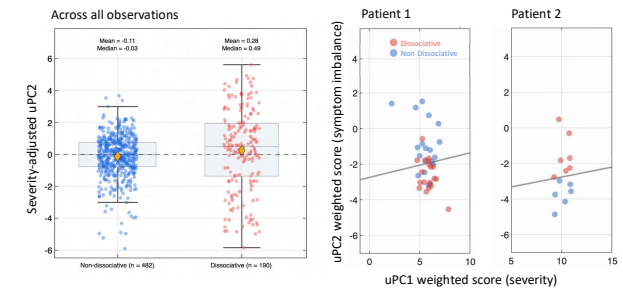
A. conceptual schematic.

PTSD questionnaire responses are embedded in a single low-dimensional map that captures both across-patient and within-patient (longitudinal) variation. Orange points show a single patient's state over time (T1–T4); other instruments can be projected into the same space.

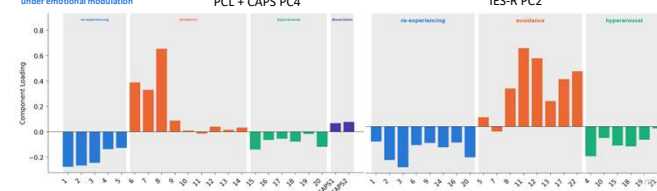


B. Dissociative subtype change within participants over time.

Across all timepoints, dissociative observations showed greater variance in severity-adjusted uPC2. In representative patients contributing both subtype states, separation was more apparent along uPC2 than along uPC1 (severity).



over emotional modulation under emotional modulation



C. Repeated across instruments.

Dissociation pattern of re-experiencing and avoidance symptom clusters, replicated in two different PTSD questionnaires