networking may significantly improve engagement with sources of help and recovery.

Virtual reality and digitally-delivered psychological treatments may also be particularly suitable for this group, whose preferred medium for accessing the world is the Internet. Finally, public mental health campaigns via digital means may prove particularly effective for reaching out to potential hikikomori people and their families to capitalize on the known interest in online activities of this group. Investing in the detection and support of new people with hikikomori should be added to the growing list of mental health research and treatment priorities in the post-COVID-19 era.

Maki Rooksby[1], Tadaaki Furuhashi[2], Hamish J. McLeod[3]
[1]Institute of Neuroscience and Psychology, University of Glasgow, Glasgow, UK; [2]Graduate School of Medicine, Nagoya University, Nagoya, Japan; [3]Institute of Health and Wellbeing, University of Glasgow, Glasgow, UK

1. Adhanom Ghebreyesus T. World Psychiatry 2020;19:129-30.
2. Li J, Yang Z, Qiu H et al. World Psychiatry 2020;19:249-50.
3. Saito T, Angles J. Hikikomori: adolescence without end. Minneapolis: University of Minnesota Press, 2013.
4. Kato TA, Kanba S, Teo AR. World Psychiatry 2020;19:116-7.
5. Furuhashi T, Bacqué M-F. Études sur la Mort 2017;150:113-24.
6. Teo AR, Fetters MD, Stufflebam K et al. Int J Soc Psychiatry 2015;61:64-72.
7. Cuartas J. Psychol Trauma 2020;12(Suppl. 1):S195-6.
8. Holmes EA, O'Connor RC, Perry VH et al. Lancet Psychiatry 2020;7:547-60.

DOI:10.1002/wps.20804

The network structure of ICD-11 complex post-traumatic stress disorder across different traumatic life events

The ICD-11 describes complex post-traumatic stress disorder (CPTSD) as consisting of six symptom clusters: re-experiencing of the trauma in the present, avoidance of traumatic reminders, sense of current threat, affective dysregulation, negative self-concept, and disturbed relationships[1].

The network approach estimates and quantifies symptom-specific associations, and symptoms that have many and/or strong associations are deemed highly central to a network. In theory, the most central symptoms should reflect the most significant aspects of a disorder and, potentially, the most important treatment targets. Considering that exposure to a traumatic life event is a defining feature of CPTSD, it is important to explore if CPTSD symptom expression varies depending upon the type of trauma.

We used network analysis to: a) examine the structural validity of CPTSD across six different index trauma experiences (unexpected death of a loved one, physical or sexual assault, life-threatening accident, life-threatening illness, natural disaster, childhood poly-traumatization), and b) explore differences in the overall importance (i.e., centrality) of specific symptom clusters across the six index trauma events.

Data were drawn from general population surveys in the US (N=1,839), the UK (N=1,051), Israel (N=1,003) and the Republic of Ireland (N=1,020). In every case, participants were recruited from existing online research panels that are representative of the general population of each country. In total, 4,913 adults participated across the four samples. Their mean age was 44.9± 15.0 years (range 18-90 years), and 60.5% were female. Clinical data were also pooled from three cohorts of clients (N=588, mean age 39.6±12.2 years, 54% female) recruited from a national health service trauma centre in Scotland.

Traumatic exposure was measured using the Life Events Checklist for DSM-5[2] or the International Trauma Exposure Measure[3]. The Childhood Trauma Questionnaire[4] was also used in the clinical samples to measure childhood trauma exposure. CPTSD symptoms were assessed using the International Trauma Questionnaire[5].

Participants from the community samples were classified into six groups based on their index trauma: unexpected death of a loved one (28.4%, N=1,393), physical/sexual assault (19.3%, N=949), life-threatening accident (15.2%, N=745), life-threatening illness (8.3%, N=409), and natural disaster (6.2%, N=307). All participants from the clinical sample reported multiple traumatic life events in childhood and were thus classified in the group of childhood poly-traumatization.

Symptom networks were estimated separately in each trauma sub-sample with the R-package Isingfit, using the default hyperparameter value of 0.25. The resultant networks were visualized using the R package qgraph[6]. This package visualizes networks as nodes (points in space reflecting symptoms) and edges (lines connecting the nodes, indicating the presence, direction and strength of associations). The overall importance/influence of each symptom node was determined using the expected influence (EI) measure of centrality. EI is calculated by summing the edge weights of a given node, and thus provides an indication of a node's direct influence over all other nodes in the given network[7]. We tested for significant differences in EI across the trauma groups using non-parametric permutation tests[8].

Networks, EI values and results from the permutation tests are available at https://www.traumameasuresglobal.com/na2020. The EI values were highly inconsistent across the different groups, suggesting that specific symptom clusters had a different relevance depending on the type of index trauma. This was supported by the permutation tests, with 31% of EI values differing significantly across the trauma groups (α=0.05).

For those who had experienced accidents or assaults, avoidance was a particularly influential symptom cluster. Sense of current threat and disturbances in relationships were influential nodes for those in the illness group. Avoidance and disturbances in relationships were high in EI for those who had experienced the unexpected death of a loved one. For those who had experienced a natural disaster, avoidance and negative self-concept

were high in EI. Finally, negative self-concept was particularly central for the poly-traumatized sample.

The prominence of sense of threat in the illness group might be suggestive of fear of recurrence. The centrality of avoidance in accidents and assaults might suggest that people are less likely to put themselves in positions where these events can re-occur. Poly-traumatization, especially when occurring in childhood, can lead to a failure to develop age-appropriate competencies, which in turn can lead to a sense of self as defective, helpless, deficient and unlovable.

These results have important implications for the treatment of CPTSD using person-centred approaches. We previously argued[9] that symptoms of CPTSD can be targeted and prioritized in therapy according to the severity or prominence of a given cluster, alongside the patient's readiness to tackle these symptoms. We now provide evidence that the expression and structure of CPTSD symptoms is associated with the index trauma event. It may be, therefore, beneficial to prioritize different symptom clusters, when planning treatment, depending on the index trauma.

Further research on exploring the salience of different symptoms clusters in CPTSD is important and may contribute to effective and efficient treatment planning.

Thanos Karatzias[1,2], Mark Shevlin[3], Philip Hyland[4,5], Menachem Ben-Ezra[6], Marylène Cloitre[7,8], Marcin Owkzarek[5], Eoin McElroy[9]
[1]School of Health & Social Care, Edinburgh Napier University, Edinburgh, UK; [2]NHS Lothian, Rivers Centre for Traumatic Stress, Edinburgh, UK; [3]Ulster University, School of Psychology, Derry, Northern Ireland; [4]Department of Psychology, Maynooth University, Kildare, Ireland; [5]Centre for Global Health, Trinity College Dublin, Dublin, Ireland; [6]School of Social Work, Ariel University, Ariel, Israel; [7]National Center for PTSD Dissemination and Training Division, VA Palo Alto Health Care System, Palo Alto, CA, USA; [8]Department of Psychiatry and Behavioural Sciences, Stanford University, Stanford, CA, USA; [9]Department of Neuroscience, Psychology and Behaviour, University of Leicester, Leicester, UK

1. Reed JM, First MB, Kogan CS et al. World Psychiatry 2019;18:3-19.
2. Weathers FW, Keane TM. J Trauma Stress 2007;20:107-21.
3. Hyland P, Karatzias T, Shevlin M et al. Psychol Trauma (in press).
4. Bernstein DP, Fink L. Childhood Trauma Questionnaire: a retrospective self-report. San Antonio: Psychological Corporation, 1998.
5. Cloitre M, Shevlin M, Brewin C et al. Acta Psychiatr Scand 2018;138:536-46.
6. Epskamp S, Cramer AO, Waldorp LJ et al. J Stat Softw 2012;48:1-18.
7. Robinaugh DJ, Millner AJ, McNally RJ. J Abnorm Psychol 2016;125:747-57.
8. Van Borkulo CD, Borsboom D, Epskamp S et al. Sci Rep 2014;4:5918.
9. Karatzias T, Cloitre M. J Trauma Stress 2019;32:870-6.

DOI:10.1002/wps.20795

Effectiveness of cognitive remediation in the ultra-high risk state for psychosis

Individuals at ultra-high risk (UHR) for psychosis suffer significant cognitive deficits that can hamper functional recovery[1]. The beneficial effect of cognitive remediation on cognition and functioning is documented in individuals with established psychosis[2,3], but little is known about the effect of this intervention in those at UHR for psychosis.

Cognitive remediation may potentially be more beneficial in the psychosis UHR state than in more advanced illness stages, owing to the potential of greater brain plasticity[4,5]. For the same reason, reduced doses may be sufficient to produce change.

The randomized, assessor-blinded, parallel-group, superiority clinical trial called FOCUS is the hitherto largest trial to report on the feasibility and efficacy of intensive neurocognitive and social cognitive remediation in the UHR state.

Participants aged 18-40 years who fulfilled the Comprehensive Assessment of At Risk Mental States (CAARMS) UHR criteria were recruited to the FOCUS trial from the psychiatric in- and outpatient facilities in the greater catchment area of Copenhagen, Denmark from April 2014 to December 2017[6].

On completion of baseline assessments, participants were randomly assigned to either 20 weeks of cognitive remediation as an add-on to treatment as usual (TAU+CR) or to treatment as usual alone (TAU). Randomization was stratified by current use of antipsychotic medication (yes/no) and IQ score (≤100/>100).

The CR intervention comprised two hours of group training (one hour of neurocognitive training, with subsequent 15 min of bridging session, and one hour of social cognitive training) once a week for a total of 20 weeks. For this group training, we used the Neuropsychological Educational Approach to Cognitive Remediation (NEAR)[7] and the Social Cognition and Interaction Training (SCIT)[8] manuals. Additionally, the participants received 12 individual sessions with a cognitive-behavioral format designed to maximize the transfer of the effect of the CR to their daily lives.

The TAU consisted of a regular contact with health professionals in the in- and outpatient facilities, involving monitoring of medication and supportive counselling but not cognitive remediation.

A total of 146 UHR individuals were assigned to either TAU or TAU+CR. Socio-demographic variables were well balanced between the groups. The TAU+CR group attended an average of 10.9±7.6 cognitive remediation sessions and had an average of 11.9±16.4 hours of total neurocognitive training.

The comparisons between the two groups on continuous outcomes at cessation of treatment and at 12-month follow-up were conducted using a generalized linear model adjusted for stratification variables and baseline imbalances, with missing data handled by multiple (m=100) imputations.

At cessation of treatment, we found no between-group difference on the primary outcome, i.e. global neurocognition as indexed by the Brief Assessment of Cognition in Schizophrenia (BACS) composite score (b=–0.125, 95% CI: –0.423 to 0.172, p=0.41). We also did not find a treatment effect on secondary outcomes, i.e. scores on Personal and Social Performance Scale