Network Analysis of Traumatic Stress: Introduction to the Special Issue

Paul Frewen¹, Meaghan O'Donnell², Wendy D'Andrea³¹Departments of Psychiatry and Psychology, Western University, London, Ontario, Canada²Phoenix Australia, Department Psychiatry, University of Melbourne, Melbourne, Australia³Department of Psychology, The New School, New York, New York, USA

Author Note

Correspondence concerning this article should be addressed to Paul Frewen,
University Hospital (Room B3-264), 339 Windermere Rd, London, Ontario, Canada, N6A
5A5

Abstract

Network analysis has emerged as a promising new statistical methodology for traumatic stress studies. The present special issue of the *Journal of Traumatic Stress* amalgamates the reports of 10 studies that employed network analysis to further our understanding of traumatic stress. The current issue includes reports of network analyses that sought to better understand the impact of different kinds of traumatic events, including child trauma and gender-based trauma exposure, on PTSD symptomatology, as defined under the *DSM-5* and *ICD-11*, as well as the relation between PTSD symptoms and trauma-related dissociative experiences and the impact of psychological treatment on trauma recovery. A variety of research designs from a diversity of international samples were employed, including concurrent, longitudinal, experience-sampling, and treatment outcome studies. Finally, a commentary on the articles included in this special issue was provided by Dr. Carl Weems.

This is the author manuscript accepted for publication and has undergone full peer review but has not been through the copyediting, typesetting, pagination and proofreading process, which may lead to differences between this version and the [Version of Record](#). Please cite this article as [doi: 10.1002/jts.22486](#).

This article is protected by copyright. All rights reserved.

Network Analysis of Traumatic Stress: Introduction to the Special Issue

As the chairs of the Scientific Committee for the 2017 annual meeting of the International Society for Traumatic Stress Studies (ISTSS), held in Chicago, we noted a high number of conference submissions that utilized network analysis (i.e., graph theory) methodologies to study traumatic stress. To our knowledge, at the time we had received the conference abstracts, network analysis had only been utilized in four published reports investigating symptoms of posttraumatic stress disorder (PTSD; Bryant et al., 2016; Frewen, Schmittmann, Brüngemann, & Borsboom, 2013; Knefel, Tran, & Lueger-Schuster, 2016; McNally et al., 2014), and only a handful of studies using network analysis would be published later the same year (Afzali et al., 2017; Armour, Fried, Deserno, Tsai, and Pietrzak, 2017; Birkeland & Heir, 2017; Choi, Batchelder, Ehlinger, Safren, & O'Leirigh, 2017; Russell, Neill, Carrion, & Weems, 2017; Spiller et al., 2017). Hence, network analysis was only just emerging as a novel and potentially promising new statistical methodology for traumatic stress studies. With the support of the *Journal of Traumatic Stress* editorship, we therefore sought to gather as many reports from the authors of these original ISTSS conference presentations as we could and bring them together into a single volume as a means of consolidating the nascent literature. Moreover, as the field has continued to grow rapidly since the conference, several additional submissions were independently received by the journal over the same time. Amalgamating these submissions together constitutes the present special issue on network analysis, and the present introduction briefly summarizes the methods and primary results taken up by the study authors and reported on herein.

McBride, Hyland, Murphy, and Elklit (2019) undertook a network analysis of PTSD symptoms in 473 Danish adults (84% women) who were seeking psychological treatment for childhood sexual abuse (M age since trauma = 22.5 years) but did not report current

substance use problems, self-harming behavior, or symptoms consistent with a psychotic or personality disorder. The authors examined networks of symptoms assessed by self-report questionnaires that measured PTSD symptoms outlined in the fifth edition of the *Diagnostic and Statistical Manual of Mental Disorders (DSM-5)*, primarily assessed via responses to Harvard Trauma Questionnaire, as well as dissociative symptoms and those listed in the criteria for PTSD and complex PTSD (CPTSD) in the 11th revision of the *International Classification of Diseases (ICD-11)*, primarily assessed via responses to the Trauma Symptom Checklist. The authors concluded that negative alternations in cognition and mood (NACM) were central symptoms in the networks examined and were indeed more central than arousal symptoms. The authors thus considered that although reducing arousal may be critical in treatment for acute PTSD, reducing NACM could be more important in therapy for chronic PTSD. The reading of their results begins a theme that is repeated in the special issue highlighting the significance of negative cognition and mood in PTSD symptom networks as well as a theme that compares obtained network structures to those hypothesized under the *DSM-5* and *ICD-11* PTSD diagnostic frameworks. Moreover, concerning investigation of dissociative experiences the authors report that measures of depersonalization (DP) and derealization (DR) were highly intercorrelated, but that overall, neither exhibited high correlations with most other symptoms with the exception of nightmares and flashbacks for DP and arousal and NACM for DR, arguably consistent with the notion of a dissociative subtype of PTSD. Their conclusion in this respect, however, contrasts with results reported in their Figure 2, which suggest that, at least in the case of DR, dissociative experiences exhibited an average overall strength centrality with other symptoms that does not appear to be appreciably less than that of most other PTSD symptoms.

Cramer, Leertouwer, Lanius, and Frewen (2020) also explored the dissociative subtype of PTSD and how it relates to other symptoms of PTSD, another emergent theme in

the special issue. The associations among DP, DR, and other PTSD symptoms were explored in a sample of 557 community participants with a PTSD diagnosis as defined by a score above the diagnostic threshold on the Posttraumatic Stress Disorder Checklist for *DSM-5* (PCL-5). Using network analysis, the authors found that the DP and DR symptoms were strongly associated, DP was the most central symptom in the network, and clusters of symptoms in the network were overall consistent with *DSM-5* PTSD clusters. The latter point notwithstanding, the authors also noted that trauma-related amnesia seemed to be more strongly associated with DR and DP than with its usual cluster, NACM. The authors also highlighted the centrality of DP with its additional connections to flashbacks and self-destructive behavior.

Another article in the special issue that recognizes the clinical significance of the inclusion of reckless or self-destructive behavior as diagnostically symptomatic of PTSD under *DSM-5* (i.e., Criterion E2) is the network analysis by Armour and colleagues (2020). The authors sought to examine network associations between a community of responses that differentiated between six of the seven PTSD symptom clusters according to the hybrid model of PTSD (excluding the externalizing behaviors cluster) and a community of 14 different reckless behaviors. Analyses were undertaken among 417 trauma-exposed adults recruited from Amazon's Mechanical Turk (MTurk), who were living in North America; approximately one-third of whom (36%) scored above the PCL-5 cutoffs for a probable PTSD diagnosis. In this study, frequency of engagement in reckless behavior was determined by responses to items on the Posttrauma Risky Behaviors Questionnaire (PRBQ), which was used to assess past-month problematic alcohol or drug use, gambling, and technology use; impulsive or risky sexual behaviors; eating behaviors; illegal behaviors; excessive spending; verbal and physical aggression; property destruction; reckless driving; self-harm, and suicidal behaviors. The authors reported that reckless behaviors were correlated with a variety of

PTSD symptoms other than *DSM-5* Criterion E2, particularly with symptoms in the NACM and arousal clusters. More specifically, correlations were observed between (a) suicidal behavior and anhedonia and (b) verbal aggression and both dysphoric arousal and avoidance; problematic technology use and anxious arousal; and (d) problematic spending and both dysphoric and anxious arousal. Moreover, among the reckless behaviors assessed, bridge strength centrality was reported to be highest overall for problematic use of technology, spending, and verbal aggression. The authors consider various psychological theories as potentially underlying such associations, including the self-medication hypothesis, emotion dysregulation, disinhibition and impulsivity, and compulsive reexposure (i.e., “addiction to trauma”). They also consider their results with respect to recent study that suggested the possible existence of a reckless behavioral subtype of PTSD (Contractor & Weiss, 2019).

Returning to the theme of evaluating the diagnostic framework for PTSD under the *IDC-11*, Knefel and colleagues (2019) conducted a network analysis of 879 participants (*M* age = 47 years; 59% women) who were recruited either from Austria (*n* = 220), Lithuania (*n* = 280), Scotland (*n* = 193), or Wales (*n* = 186) and had each completed the International Trauma Questionnaire (ITQ) to specifically assess of *ICD-11* CPTSD. Lifetime trauma exposure across these samples was notably high but varied somewhat by country. For example, approximately half (48%) of participants in the Wales sample reported histories of childhood physical or sexual abuse, whereas all the Austrian adults had lived in institutional foster care during childhood, where they experienced maltreatment: Nearly all participants in the Austrian sample reported histories of physical abuse (98%) and most reported histories of sexual abuse (70%). Moreover, the samples also varied regarding CPTSD prevalence, which ranged from 9% in the Lithuanian sample to 53% in the Scottish sample; this was likely due to varying recruitment methods (e.g., some participants were recruited via their ongoing participation in CPTSD treatment). Despite heterogenous recruitment procedures across

international samples, the authors found stable symptom profiles, network structures, and centrality estimates, which they conclude supports the replicability of CPTSD as a symptom network and trauma-related diagnostic construct. Moreover, the authors highlight the self- or NACM-related symptom of “worthlessness” as the most central symptom in their networks, which is again consistent with an emphasis on the centrality of negative cognition in relation to PTSD symptoms. Concerning dissociative experiences, the authors also reported that DP and DR were strongly correlated symptoms in the network and exhibited average centrality overall with other symptoms.

A differing emphasis, however, is provided by the results reported for the network analysis of *DSM-5* PTSD symptoms conducted by Cero and Kilpatrick (2020). The authors examined *DSM-5* PTSD symptom reports for 2,953 U.S. adults, drawn from the National Stressful Events Survey (NSES). In this sample, 84% of participants reported some form of trauma exposure and 173 met probable criteria for PTSD. The authors found that only three of the six most central symptoms identified by the network analysis overlapped with *ICD-11* criteria for PTSD. This was illustrated very simply and effectively by a Venn diagram and dummy-coded correlations between inferred node strengths under the *ICD-11* framework, coded as present versus absent, and the obtained network correlations. These results were, in turn, interpreted to cast doubt on the centrality of the *ICD-11* PTSD symptom criteria. In contrast, the authors report that several symptoms from the *DSM-5* NACM cluster were among the most central in the network, which seemingly supports the expanded symptom constellation of PTSD under *DSM-5*. In the authors' view, the network centrality of a symptom might provide a more objective, quantitative metric for determining the so-called “core,” or defining symptoms, of PTSD under both *DSM-5* and *ICD-11* criteria. Moreover and similar to what has been reported in several previous studies, the authors point out that, using the same survey item set, only about half (47%) of the participants in their sample who

met *DSM-5* diagnostic criteria for PTSD ($n = 130$) would be similarly diagnosed according to *ICD-11* criteria.

In the only study within the special issue to examine treatment outcomes, Papini, Rubin, Telch, Smits, and Hien (2019) examined PTSD symptom networks, both before and after psychological treatment, in a multisite randomized controlled trial of Seeking Safety for co-occurring PTSD and substance use disorders compared to a health education control group. The primary results of the trial, published a decade prior, had shown clinically significant reductions in PTSD symptoms as assessed by clinician interview (i.e., the Clinician-Administered PTSD Scale [CAPS]) across both interventions through 1-year follow-up, but no significant differences between treatments among the 353 women who participated. Novel findings of the network analysis, however, showed that node metrics that were calculated pretreatment, specifically node strength and predictability, were correlated with the strength of the correlation between a specific symptom's change and the change in the severity of all other symptoms. In particular, the authors found that symptoms of intrusion, startle, and psychological detachment were among the most central symptoms in the pretreatment network and were also among the symptoms that exhibited the largest correlations between individual symptom change and overall network change. Conceptually, this analysis thus indicates that effecting change in these three symptoms may be a particularly effective target for treatment, given that they were more interconnected before treatment, and that change from pretreatment in these nodes was highly correlated with overall network change. Moreover, the same associations could not be found for the mean severity of the symptom as assessed pretreatment, which suggests that network metrics may increment over symptom severity metrics in the prediction of outcomes of psychological treatment.

Greene, Gelkopf, Fried, Robinaugh, and Pickman (2019) continued the theme of interest in negative emotions through their network analysis of negative emotions and *DSM-5* PTSD symptom clusters, assessed using the PCL-5, in a sample of Israeli civilians ($n = 96$, 71% women) who were exposed to rocket fire during the Israel–Gaza War. The researchers used 30-day, twice-daily experience sampling smartphone surveys during the period of conflict; an average of approximately 49 of a possible 60 potential assessments were collected for each participant. Across time, the authors found that contrary to their hypotheses, PTSD symptom clusters were more predictive of negative emotions than vice versa. Symptoms of PTSD-related arousal were particularly strong predictors that negative emotions would be reported at the next assessment, although emotional reports of fear and, to a lesser extent, sadness were also found to be strong predictors of PTSD symptom reports at the next assessment. The authors also report that, for contemporaneous networks (i.e., regarding reports that occurred at a certain time point), negative emotions were most highly correlated with the NACM and arousal symptom clusters, consistent with item overlap. Specifically, the negative emotions most highly correlated with the NACM cluster were sadness, loneliness, despair, anger, and helplessness, whereas the negative emotions most strongly correlated with the arousal cluster were stress, fear, overwhelmed, anger and sadness; these distinctions would appear to cross-validate the clinical differentiation between the NACM and arousal symptom clusters. In comparison, the negative emotions of sadness, stress, fear, and loneliness were found to exhibit the strongest correlations with PTSD symptoms overall. In general, the authors emphasize that, as assessed during a period of conflict, civilians experience various peritraumatic emotions, including but not limited to fear, and that such responses are strongly correlated to PTSD symptom clusters.

Reeves et al. (2020) also examined within-person repeated measures by assessing PTSD symptoms four times daily for 30 days in a sample of 20 participants with PTSD who

were recruited from online advertisements and the researchers' local community. The average number of per-participant ratings obtained was 126 (range: 110–168), which were scored on visual analogue scales ranging from 0 to 100. The authors also found that, for contemporaneous networks, NACM symptoms exhibited the overall highest strength centrality, specifically the symptoms of negative cognitions and negative emotions. Moreover, negative emotions and, to a close extent, negative cognitions were the symptoms with the highest outstrength—that is, they were the strongest predictors of other symptoms at future time points. Other symptoms with high outstrength included difficulties concentrating, flashbacks, and distressing dreams. In comparison, regarding temporal networks, the authors also found that distressing dreams and sleep disturbance exhibited the highest instrength, meaning that these outcomes were strongly predicted by other PTSD symptoms measured at an earlier time. These findings therefore also underline the significance of negative cognition and emotion to understanding the larger symptom constellation of PTSD. Further, the authors provide a nuanced, idiographic description of two of their participants to better illustrate the potential for guiding treatment planning that idiographic symptom networks can have when they are measured across time.

With the recognition that female gender is a well-established risk factor for PTSD, the study by Gay, Wisco, Jones, and Murphy (2020) involved a network analysis of *DSM-IV* PTSD symptom reports collected from 1,104 adults (66% women) who were surveyed following natural disasters and accidents that occurred in Mexico and Ecuador to compare symptom expression between men and women in cultures in which traditional gender roles predominate; symptoms were assessed using the Spanish-language version of the Composite International Diagnostic Interview. The analyses revealed that the most central symptoms, as measured by strength centrality, were loss of interest and flashbacks in men, whereas impaired concentration, avoiding thoughts and feelings, and physiological reactivity were the

most central symptoms in women. This stated, the authors concluded that the overall differences between the networks obtained in men versus women were relatively few and far between, and the network comparison test suggested the global structure and strength identified between the networks of each sex did not significantly differ. Indeed, the networks appeared remarkably similar, with the possible exceptions of a higher strength centrality for hypervigilance and physiological reactivity to trauma reminders among women and a higher strength centrality for sleep problems and loss of interest among men (see Figure 2). Overall, the authors concluded that although women may report an overall higher level of PTSD symptom burden, the structuring of PTSD symptoms may not differ appreciably between the sexes.

Finally, MacCallum and Bryant (2019) conducted a network analysis of prolonged grief disorder (PGD) reactions and quality of life (QoL) as assessed by semistructured interview in 215 bereaved individuals in Australia, approximately two-thirds (64%) of whom met diagnostic criteria for PGD but were not actively suicidal or experiencing psychotic symptoms at the time of assessment. Approximately four in every five participants were women, and the average participant age was just under 50 years. Just over one in three participants had lost a parent (36%) or a partner (30%), whereas about one in five had lost a child (22%), and the mean time since loss in the study was longer than three years. Further, cause of death was reported to be a medical condition in most of the cases (77%), although accidental deaths (13%) and suicides (9%) were not uncommon. The authors concluded that PGD symptoms were strongly intercorrelated and linked with QoL. More specifically, the PGD symptoms of meaninglessness and role confusion were particularly strongly linked with reduced psychological QoL, PGD-related trust difficulties were linked with reduced social QoL, and PGD-related bitterness was linked with reduced environmental QoL. Overall, PGD-related emotional pain and meaninglessness evidenced high strength centrality within the

networks examined, although loss of meaning, role confusion, trust, and bitterness were the PGD-related symptoms that evidenced the highest bridge centrality with QoL. The authors thus concluded that compared to other PGD symptoms, such as emotional pain, loss of meaning and self-identity might be more directly associated with low QoL in bereavement, the latter perhaps having a more indirect association with QoL.

In short, we note that the current special issue includes reports of network analyses seeking to better understand *DSM-5* PTSD symptomatology (Armour et al., 2020; Cero & Kilpatrick, 2020; Greene et al., 2019; McBride et al., 2019), especially the *DSM-5* NACM symptom cluster (Armour et al., 2020; Cero & Kilpatrick, 2020; Greene et al., 2019; Knefel et al., 2019; McBride et al., 2019); the difference between the diagnostic constructs of PTSD under *DSM-5* versus *ICD-11* (Cero & Kilpatrick, 2020; Greene et al., 2019; McBride et al., 2019); trauma-related dissociative experiences (Cramer et al., 2020; Knefel et al., 2019; McBride et al., 2019); the impact of psychological treatment (Papini et al., 2019); and the impact of different kinds of traumatic events, specifically childhood trauma (Knefel et al., 2019; McBride et al., 2019; Papini et al., 2019) and gender and gender-based trauma exposure (Gay et al., 2020). Both concurrent and longitudinal repeated measures were employed in various studies (Armour et al., 2020; Greene et al., 2019; Papini et al., 2019). Moreover, this collection of articles includes reports on studies from a diverse number of international samples of varying ethnicities, consistent with the ISTSS mandate to study the impact of traumatic stress globally. A culminating article by Weems (2020) provides further commentary on the articles in this special issue, and some additional observations for the field going forward. In closing, we would like to thank the authors for their work in furthering our introduction of the application of network analysis to the field of traumatic stress studies, and we look forward to continuing study along these lines as the field matures.

References

- Afzali, M. H., Sunderland, M., Teesson, M., Carragher, N., Mills, K., & Slade, T. (2017). network approach to the comorbidity between posttraumatic stress disorder and major depressive disorder: The role of overlapping symptoms. *Journal of Affective Disorders*, 208, 490–496. <https://doi.org/10.1016/j.jad.2016.10.037>
- Armour, C., Fried, E. I., Deserno, M. K., Tsai, J., & Pietrzak, R. H. (2017). A network analysis of DSM-5 posttraumatic stress disorder symptoms and correlates in U.S. military veterans. *Journal of Anxiety Disorders*, 45, 49-59.
- Armour, C., Greene, T., Contractor, A.A., Weiss, N., Dixon-Gordone, K., & Ross, J. (2020). Posttraumatic stress disorder symptoms and reckless behaviors: A network analysis approach. *Journal of Traumatic Stress*. Current issue.
- Birkeland, M. S., & Heir, T. (2017). Making connections: Exploring the centrality of posttraumatic stress symptoms and covariates after a terrorist attack. *European Journal of Psychotraumatology*, 8(3), 1333387. <https://doi.org/10.1080/20008198.2017.1333387>
- Bryant, R. A., Creamer, M., O'Donnell, M., Forbes, D., McFarlane, A. C., Silove, D., & Hadzi-Paylovic, D. (2016). Acute and chronic posttraumatic stress symptoms in the emergence of posttraumatic stress disorder: A network analysis. *JAMA Psychiatry*, 74, 135. <https://doi.org/10.1001/jamapsychiatry.2016.3470>
- Cero, I., & Kilpatrick, D. G. (2020). Network Analysis of PTSD Symptoms in a National Sample of U.S. Adults: Implications for the PTSD Phenotype and the ICD-11 Model of PTSD. *Journal of Traumatic Stress*. Current issue.

Choi, K. W., Batchelder, A. W., Ehlinger, P. P., Safren, S. A., & O'Cleirigh, C. (2017).

Applying network analysis to psychological comorbidity and health behavior: Depression, PTSD, and sexual risk in sexual minority men with trauma histories.

Journal of Consulting and Clinical Psychology, 85, 1158–1170.

Contractor, A. A., & Weiss, N. H. (2019). Typologies of PTSD clusters and reckless/self-destructive behaviors: A latent profile analysis. *Psychiatry Research*, 272, 682–691.

<https://doi.org/10.1016/j.psychres.2018.12.124>

Cramer, A. O., Leertouwer, I., Lanius, R., & Frewen, P. (2020). A Network approach to studying the associations between posttraumatic stress disorder symptoms and dissociative experiences. *Journal of Traumatic Stress*. Current issue.

Frewen, P. A., Schmittmann, V. D., Bringmann, L. F., & Borsboom, D. (2013). Perceived causal relations between anxiety, posttraumatic stress and depression: extension to moderation, mediation, and network analysis. *European Journal of Psychotraumatology*, 4, 20656. <https://doi.org/10.3402/ejpt.v4i0.20656>

Gay, N. G., Wisco, B. E., Jones, E. C., & Murphy, A. D. (2020). Posttraumatic stress disorder symptom network structures: A comparison between the genders. *Journal of Traumatic Stress*. Current issue.

Greene, T., Gelkopf, M., Fried, E. I., Robinaugh D. J., & Pickman, L. L. (2019). Dynamic network analysis of negative emotions and *DSM-5* posttraumatic stress disorder symptom clusters during conflict. *Journal of Traumatic Stress*. Current issue. <https://doi.org/10.1002/jts.22433>

Knefel, M., Lueger-Schuster, B., Bisson, J., Karatzias, T., Kazlauskas, E., & Roberts, N. P. (2019). Cross-cultural comparison of *ICD-11* complex posttraumatic stress disorder symptom networks in Austria, the United Kingdom, and Lithuania. *Journal of Traumatic Stress*. Current issue. <https://doi.org/10.1002/jts.22361>

- Knefel, M., Tran, U. S., & Lueger-Schuster, B. (2016). The association of posttraumatic stress disorder, complex posttraumatic stress disorder, and borderline personality disorder from a network analytical perspective. *Journal of Anxiety Disorders*, 43, 70–78. <https://doi.org/10.1016/j.janxdis.2016.09.002>
- MacCallum, F., & Bryant, R.A. (2019). A network approach to understanding quality of life impairments in prolonged grief disorder. *Journal of Traumatic Stress*. Current issue. <https://doi.org/10.1002/jts.22383>
- McBride, O., Hyland, P., Murphy, J., & Elklit, A. (2019). Network analysis of posttraumatic stress experiences in adults seeking psychological treatment for childhood sexual abuse. *Journal of Traumatic Stress*. Current issue. <https://doi.org/10.1002/jts.22381>
- McNally, R. J., Robinaugh, D. J., Wu, G. W., Wang, L., Deserno, M. K., & Borsboom, D. (2014). Mental disorders as causal systems: A network approach to posttraumatic stress disorder. *Clinical Psychological Science*, 3, 836–849. <https://doi.org/10.1177/2167702614553230>
- Papini, S., Rubin, M., Telch, M. J., Smits, J.A., & Hien, D. A. (2019). Pretreatment posttraumatic stress disorder symptom network metrics predict the strength of the association between node change and network change during treatment *Journal of Traumatic Stress*. Current issue. <https://doi.org/10.1002/jts.22379>
- Reeves, J. W., & Fisher, A. J. (2020). An examination of idiographic networks of posttraumatic stress disorder symptoms. *Journal of Traumatic Stress*. Current issue.

Russell, J. D., Neill, E. L., Carrión, V. G., & Weems, C. F. (2017). The network structure of posttraumatic stress symptoms in children and adolescents exposed to disasters.

Journal of the American Academy of Child & Adolescent Psychiatry, 56, 669–677.e5.

<https://doi.org/10.1016/j.jaac.2017.05.021>

Spiller, T. R., Schick, M., Schnyder, U., Bryant, R. A., Nickerson, A., & Morina, N. (2017).

Symptoms of posttraumatic stress disorder in a clinical sample of refugees: A network analysis. *European Journal of Psychotraumatology*, 8, 1318032.

<https://doi.org/10.1080/20008198.2017.1318032>

Weems, C. F. (2020). Assessment, intervention, theory, and the nature of reality: Actualizing the potential of network perspectives on posttraumatic stress disorder. *Journal of Traumatic Stress*. Current issue.

Minerva Access is the Institutional Repository of The University of Melbourne

Author/s:

Frewen, P;O'Donnell, M;D'Andrea, W

Title:

Introduction to the Special Issue: Network Analysis of Traumatic Stress

Date:

2020-02-01

Citation:

Frewen, P., O'Donnell, M. & D'Andrea, W. (2020). Introduction to the Special Issue: Network Analysis of Traumatic Stress. JOURNAL OF TRAUMATIC STRESS, 33 (1), pp.5-9. <https://doi.org/10.1002/jts.22486>.

Persistent Link:

<http://hdl.handle.net/11343/275352>