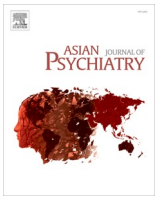
Asian Journal of Psychiatry 105 (2025) 104394

Contents lists available at ScienceDirect

Asian Journal of Psychiatry

journal homepage: www.elsevier.com/locate/ajp



Dissociation and substance abuse among people with PTSD: Results from the National Survey for Stress and Health in Japan

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ARTICLE INFO

Keywords:
Posttraumatic stress disorder (PTSD)
Dissociation
Substance abuse
Drug abuse
Comorbidity

ABSTRACT

Patients with posttraumatic stress disorder (PTSD) usually have other psychiatric comorbidities. This study analyzed data from a national survey in Japan (N = 1005 trauma-exposed adults) and examined co-occurring dissociation and substance abuse in patients with probable PTSD. Participants completed standardized screening measures of PTSD, dissociative symptoms, and substance abuse at baseline (T1), and then reported their levels of substance abuse again after 3 months (T2). Of participants who screened for PTSD at T1 (n = 639), 36.1 % reported dissociative symptoms, and 61.8 % reported substance abuse in the past two weeks. Participants with dissociative PTSD had significantly higher levels of substance abuse at both T1 and T2 than their non-dissociative counterparts. T1 dissociative symptoms significantly predicted T2 substance abuse (β =.075, p = .006). Dissociative symptoms also moderated the effects of T1 PTSD symptoms on T2 substance abuse. This study provides first data regarding the prevalence of dissociative symptoms and substance abuse among Japanese adults with PTSD. We also found that people with dissociative PTSD were more prone to subsequent substance abuse problems. Early screening for dissociative symptoms among people with PTSD is important. Future studies are needed to investigate the neural mechanisms behind dissociation and substance abuse.

1. Background

Posttraumatic Stress Disorder (PTSD) is a trauma and stress-related disorder that is characterized by re-experience, avoidance, negative thoughts or feelings, and trauma-related arousal and reactivity (American Psychiatric Association, 2022). In light of the increasing evidence documenting dissociation among people with PTSD (Dalenberg et al., 2012, Hansen et al., 2017, Stein et al., 2013, Steuwe et al., 2012, Wolf et al., 2012), the dissociative subtype of PTSD has been recognized in the fifth edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-5). However, dissociation is a multidimensional experience (e.g., amnesia, intrusions, identity dissociation) (Dell, 2006, Fung et al., 2024a). Dissociation refers to failures in the process of integrating one's own biopsychosocial experiences (Loewenstein, 2018). Yet, the DSM-5 only recognized the depersonalization/derealization subtype of PTSD. More studies are required to understand the prevalence of overall dissociative symptoms in people with PTSD in diverse, cross-cultural contexts, rather than focusing only on depersonalization and derealization.

In addition, the comorbidity of PTSD and substance abuse has been widely recognized (Van Den Brink 2015). Even though both PTSD and substance abuse disorder (SUD) can be attributed to early childhood trauma, prior studies have indicated PTSD to precede SUD far more frequently than the other way round (Kessler et al., 2013, Sartor et al.,

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https://doi.org/10.1016/j.ajp.2025.104394
Received 30 December 2024; Received in revised form 5 February 2025; Accepted 6 February 2025
Available online 9 February 2025

2011). The trauma model suggests that trauma-related symptoms such as PTSD could predict subsequent substance abuse (Gould et al., 2021, Lee et al., 2023). However, this relationship might be influenced or moderated by dissociation because people with high levels of dissociation might be more likely to use internal or external means to disconnect oneself from the painful experiences (e.g., trauma memories, stressors) (Saraiya et al., 2024, Schimmenti et al., 2022).

Evidence from previous studies (Brady et al., 2021, Schimmenti et al., 2022) supports the self-medication theory and the trauma model of substance abuse. In particular, they have proposed that substance abuse may be conceptualized as a coping mechanism for unresolved trauma (Ross, 2006, Ross et al., 2019, Schimmenti et al., 2022). A recent study testing this model (Lee et al., 2023) has shown that dissociative symptoms are associated with alcohol abuse in the Asian context. In fact, dissociative PTSD was previously found to occur alongside substance abuse, where people with the comorbid condition have not only reported a higher number of substance abuse, but also more frequent lifetime overdose (Gidzgier et al., 2019, Mergler and Driessen 2017). Additionally, people with comorbid dissociative PTSD and substance abuse were also found to hold the belief that substances could help them manage psychological symptoms and problems (Najavits and Walsh, 2012).

Keeping this literature in mind, the present study aimed to contribute to the growing literature on the trauma model of substance abuse. We first described the frequency of co-occurring dissociative symptoms and substance abuse in a national sample of people with PTSD in Japan. We then tested the hypothesis that the effects of PTSD symptoms on subsequent substance abuse would be stronger under higher levels of dissociation. To our knowledge, this is the first large-scale longitudinal study to investigate PTSD, dissociation, and substance abuse in the Asian context.

2. Methods

We analyzed longitudinal data from a national survey project for mental health screening in Japan. This study obtained ethical approval from the institutional review board at the National Center of Neurology and Psychiatry, Japan. The detailed methodology has been described elsewhere and can be found in previous papers (Ito et al., 2019). In brief, the present sample included 1005 Japanese adults who previously reported trauma exposure and screened positive for PTSD on the PTSD Checklist for DSM-5 (PCL-5). They then completed two waves of standardized assessments, which took place three months after the first screening.

All participants provided informed consent for the study, where they first completed screening measures at baseline (T1), and then reported their psychiatric symptoms again after four months at follow-up (T2).

On the screening questionnaire, participants filled in a demographic survey and self-reported measures of psychiatric symptoms. In the present study, the following variables were included for analysis: PTSD symptoms were assessed using the Japanese version of the PCL-5 (Ito et al., 2019), which is a 20-item measure which assesses PTSD symptoms based on DSM-5 rules. Dissociative symptoms were assessed using the Dissociative Experiences Scale (DES) (Bernstein and Putnam, 1986) at T1. The DES is a 28-item measure which assesses the levels of psychoform dissociation. Additionally, the *DES Taxon* (DES-T) subscale (Items 3, 5, 7, 8, 12, 13, 22, and 27) was used to screen severe pathological dissociation with a cut-off score of 35 (Waller and Ross, 1997). Substance abuse was assessed using the substance abuse domain of the Cross-Cutting Symptom Measure (CCSM) (Narrow et al., 2013).

Statistical analysis was conducted using SPSS 22.0. Descriptive statistics were first used to display the sample characteristics. Multiple regression and moderation analyses were then conducted using PROCESS V4.2 (Hayes, 2017) to examine the longitudinal relationship between T1 PTSD symptoms and T2 substance abuse, alongside the moderating effects of T1 dissociative symptoms in this sample.

3. Results

In this sample (N = 1005), the ages of the participants ranged from 18 to 81 (M = 44.1, SD = 10.18). Among them, 50.2 % were female. The mean score of DES-T was 20.0 (SD = 22.12), where 25.7 % of the participants had severe pathological dissociation (DES-T ≥ 35). A total of 693 participants (69.0 %) had probable PTSD at T1 as screened for using the PCL-5 according to DSM-5 rules. In this subsample (N = 693), dissociative symptoms were common (36.1 % DES ≥ 30; 31.3 % DES-T ≥ 35); in addition, while 61.8 % had substance abuse in the past two weeks at T1 as screened for using the CCSM subscale (i.e., reported "slight", "mild", "moderate", or "severe" on Item 21, 22, or 23 on the CCSM) (in particular, 40.8 % reported drug misuse). In this subsample (N = 639), participants with dissociative PTSD (DES ≥ 30) (n = 250) had significantly higher levels of substance abuse at both T1 (M = 7.62, SD = 3.63 vs M = 5.39, SD = 2.91; t = 8.328, p < .001) and T2 (M = 7.54, SD = 3.37 vs M = 5.53, SD = 3.00; t = 8.089, p < .001) than those with non-dissociative PTSD (DES < 30) (n = 443).

To examine the moderating effects of T1 dissociative symptoms, we first included T1 PTSD and dissociative symptoms in the regression model predicting T2 substance abuse. After controlling for age, gender, and T1 substance abuse, T1 PTSD symptoms did not predict T2 substance abuse (β =.008, p = n.s.), whereas T1 dissociative symptoms were shown to be a significant predictor of T2 substance abuse (β =.075, p = .006). Upon adding the interaction term into the model, a statistically significant interaction effect was observed (ΔR^2 =.003, p = .020) and the interaction term significantly predicted T2 substance abuse (β =.173, p = .020). Furthermore, subsequent John-Neyman results showed that the effect of T1 PTSD symptoms on T2 substance abuse was significant only when T1 DES scores were 47 or higher (see Fig. 1). Therefore, higher levels of dissociative symptoms aggravated the effects of PTSD symptoms on subsequent substance abuse.

4. Discussion

This study was the first to explore the moderating effects of dissociative symptoms on the longitudinal relationship between PTSD symptoms and subsequent substance abuse. We first described the prevalence of co-occurring dissociative symptoms and substance abuse among Japanese individuals with PTSD. In addition, we found that, among individuals with PTSD, dissociative symptoms, rather than PTSD symptoms, predicted subsequent substance abuse. Moreover,

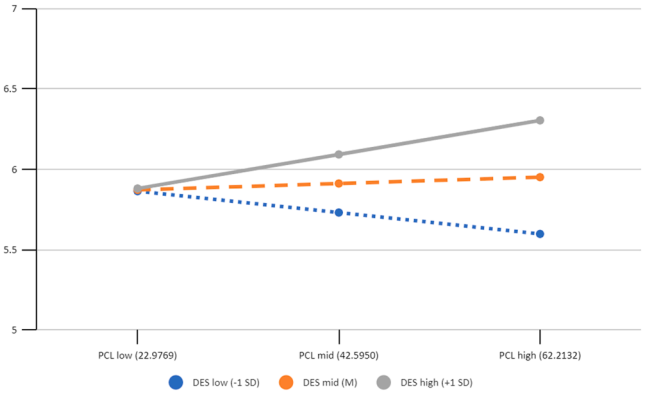

Fig. 1. Conditional effects of T1 PTSD symptoms on T2 substance abuse, with T1 dissociative symptoms as a moderator; demographic variables (age, gender) and T1 substance abuse as covariates. Notes. The plot was generated in SPSS PROCESS Model 1 to visualize the conditional effect of the focal predictor. The cutoffs of the independent variable and the moderator were generated from SPSS PROCESS Model 1 for probing the details of interaction and they do not have implications on groupings. The Y axis was calibrated as the possible scores of the dependent variable (substance abuse).

dissociative symptoms were also found to be a significant moderator that may aggravate the effects of PTSD symptoms on subsequent substance abuse.

Our results are in fact consistent with those reported in a previous study from Taiwan (Lee et al., 2023), which found that trauma and dissociative symptoms are associated with substance abuse. It provides cross-cultural evidence for the link between dissociation and substance. The findings provide valuable insights into the understanding and prevention of substance abuse for people with PTSD. Dissociation was identified as a moderator that could influence the relationship between PTSD symptoms and substance abuse. These findings were in line with previous ones, where people with dissociative PTSD exhibited higher levels of substance abuse (Gidzgier et al., 2019, Mergler and Driessen 2017). More importantly, our results have provided further evidence for the trauma model of substance abuse in the Asian context (Lee et al., 2023), in which dissociation following trauma might lead to higher levels of substance abuse. Therefore, early screening for dissociative symptoms among people with PTSD is necessary to prevent subsequent substance abuse from developing, so that timely interventions could take place. In fact, we found that severe pathological dissociation is common in our participants with probable PTSD (31.3 % DES-T $\geq$ 35), it is possible that some of them might have undiagnosed dissociative disorders.

This study not only provides first data regarding the prevalence of dissociative symptoms and substance abuse among Japanese individuals with PTSD, but also demonstrates that dissociation could aggregate the effects of PTSD symptoms on subsequent substance abuse. Our results suggest that the "chemical dissociation" hypothesis (i.e., achieving the state of dissociation through the use of chemicals) (Langeland et al., 2002) requires more empirical evaluation. Although it is possible that individuals with high levels of dissociation are less likely to use substance because they have used a lot of psychological dissociation. Our findings point to the opposite: We found that dissociative symptoms predicted substance abuse in our sample. It implies that Patients with PTSD whose dissociation level is high may have a higher tendency to avoid internal and external sufferings, and therefore they may also be more likely to use substances to cope with stressors and pain. With that said, a more nuanced understanding on the underlying mechanisms between dissociation and substance abuse is also necessary, due to the varying means behind the use of substances (Somer et al., 2010, Najavits, 2002). Finally, it is important to noted that dissociative symptoms and PTSD are found to be prevalent in Asian regions (Fung et al., 2024b, Fung et al., 2022), and these could increase the risk of developing substance abuse. Therefore, prioritizing the prevention of dissociation and PTSD is also crucial for public health initiatives.

Although having the strengths of employing a longitudinal design and a relatively large sample size, this study has several limitations. Firstly, self-selection bias might take place through online recruitment. Besides, we relied on self-report data and screening tools, instead of structured clinical interviews. Moreover, we measured different types of substance abuse together (alcohol use, drug use, and cigarettes). Future studies could benefit from more robust assessment methods (e.g., diagnostic interviews) to generate more conclusive findings.

Ethics approval

The institutional review board at the National Center of Neurology and Psychiatry, Japan, approved the study (Approval Number: A2015–086). All participants provided informed consent before participation.

Funding

This study was supported by a Grant-in-Aid for Scientific Research (A) (15H01979) from the Japan Society for the Promotion of Science, Tokyo, Japan. The funders had no role in the study design, data collection or analysis, decision to publish, or preparation of the manuscript.

Financial disclosures

None to declare.

Author contributions

HWF contributed to the conceptualization and conducted data analysis. HWF, CHOH, and CTYC prepared the first draft of the manuscript. MI conceived and designed the study, and managed study administration, including the ethical review process. PHC and MI provided critical comments on the manuscript related to intellectual content. All authors have read and approved the final manuscript.

Code availability

Not applicable.

Consent to participate

Informed consent was obtained from all participants.

Consent for publication

Not applicable.

CRediT authorship contribution statement

Ito Masaya: Writing – review & editing, Resources, Methodology, Investigation. **Fung Hong Wang:** Writing – original draft, Formal analysis, Conceptualization. **Cheung Cherry Tin Yan:** Writing – review & editing. **Chou Po-Han:** Writing – review & editing, Resources, Investigation. **Huang Chak Hei Ocean:** Writing – original draft, Formal analysis.

Declaration of Competing Interest

None.

Acknowledgements

None.

Data availability

The dataset generated and analyzed during the current study is available from the corresponding author on reasonable request.

References

American Psychiatric Association, 2022. Diagnostic and Statistical Manual of Mental Disorders: DSM-5-TR. American Psychiatric Association Publishing.

Bernstein, E.M., Putnam, F.W., 1986. Development, reliability, and validity of a dissociation scale. J. Nerv. Ment. Dis. 174, 727–735.

Brady, K.T., Mccauley, J.L., Back, S.E., 2021. The comorbidity of post-traumatic stress disorder (PTSD) and substance use disorders. In: El-Guebaly, N., Carrð, G., Galanter, M., Baldacchino, A.M. (Eds.), Textbook of Addiction Treatment: International Perspectives. Springer International Publishing, Cham.

Dalenberg, C.J., Glaser, D., Alhassoon, O.M., 2012. Statistical support for subtypes in posttraumatic stress disorder: the how and why of subtype analysis. Depress Anxiety 29, 671–678.

Dell, P.F., 2006. The multidimensional inventory of dissociation (MID): a comprehensive measure of pathological dissociation. J. Trauma Dissociation 7, 77–106.

Fung, H.W., Chau, A.K.C., Lam, S.K.K., Chien, W.T., Wong, J.Y., 2024a. A cross-cultural study of different facets of dissociation: Validity and relationship with childhood trauma. Child Abus. Negl. 157, 107067.

Fung, H.W., Lam, S.K.K., Wong, J.Y.-H., 2024b. DSM-5 BPD and ICD-11 complex PTSD: Co-occurrence and associated factors among treatment seekers in Hong Kong. Asian J. Psychiatry 101, 104195.
Fung, H.W., Wong, E.N.M., Lam, S.K.K., Chien, W.T., Hung, S.L., Ross, C.A., 2022. The prevalence of dissociative symptoms and disorders: findings from a sample of community health service users in Hong Kong. Asian J. Psychiatry.
Gidzgier, P., Grundmann, J., Lotzin, A., Hiller, P., Schneider, B., Driessen, M., Schaefer, M., Scherbaum, N., Hillemacher, T., Schöfer, I., 2019. The dissociative subtype of PTSD in women with substance use disorders: exploring symptom and exposure profiles. J. Subst. Abus. Treat. 99, 73–79.
Gould, F., Jones, M.T., Harvey, P.D., Reidy, L.J., Hodgins, G., Michopoulos, V., Maples-Keller, J., Rothbaum, B.O., Rothbaum, A., Ressler, K.J., Nemeroff, C.B., 2021. The relationship between substance use, prior trauma history, and risk of developing post-traumatic stress disorder in the immediate aftermath of civilian trauma. J. Psychiatr. Res. 144, 345–352.
Hansen, M., Ross, J., Armour, C., 2017. Evidence of the dissociative PTSD subtype: a systematic literature review of latent class and profile analytic studies of PTSD. J. Affect. Disord. 213, 59–69.
Hayes, A.F., 2017. Introduction to Mediation, Moderation, and Conditional Process Analysis: A Regression-based Approach. Guilford publications.
Ito, M., Takebayashi, Y., Suzuki, Y., Horikoshi, M., 2019. Posttraumatic stress disorder checklist for DSM-5: Psychometric properties in a Japanese population. J. Affect Disord. 247, 11–19.
Kessler, R.C., Sonnega, A., Bromet, E., Hughes, M., Nelson, C.B., 2013. Posttraumatic Stress Disorder in The National Comorbidity Survey. Fear and anxiety. Routledge.
Langeland, W., Draijer, N., Van Den Brink, W., 2002. Trauma and dissociation in treatment-seeking alcoholics: towards a resolution of inconsistent findings. Compr. Psychiatry 43, 195–203.
Lee, K., Lam, S.K.K., Hung, S.L., Fung, H.W., 2023. Substance abuse among mothers in Taiwan: investigating its prevalence and testing the trauma model. Asian J. Psychiatry 90, 103805.
Loewenstein, R.J., 2018. Dissociation debates: everything you know is wrong. Dialog-. Clin. Neurosci. 20, 229–242.
Mergler, M., Driessen, M., L., 2017. J. Psychoact. Drugs 49, 225–232.
Najavits, L., 2002. Seeking safety: a treatment manual for PTSD and substance abuse. Guilford Press.
Najavits, L.M., Walsh, M., 2012. Dissociation, PTSD, and substance abuse: an empirical study. J. Trauma Dissociation 13, 115–126.
Narrow, W.E., Clarke, D.E., Kuramoto, S.J., Kraemer, H.C., Kupfer, D.J., Greiner, L., Regier, D.A., 2013. DSM-5 field trials in the United States and Canada, part iII: development and reliability testing of a cross-cutting symptom assessment for DSM-5. Am. J. Psychiatry 170, 71–82.
Ross, C.A., 2006. The Trauma Model: A Solution to the Problem of Comorbidity in Psychiatry. Greenleaf Book Group.
Ross, C.A., Engle, M.C., Baker, B., 2019. Reductions in symptomatology at a residential treatment center for substance use disorders. J. Aggress. Maltreatment Trauma 28, 1173–1180.
Saraiya, T.C., Jones, A.C., Lopez-Castro, T., Hood, C.O., Flores, J., Badour, C.L., 2024. Trauma-related shame predicts daily non-medical prescription opioid use among individuals with PTSD symptoms. J. Psychiatr. Res. 171, 171–176.
Sartor, C.E., Mccutcheon, V.V., Pommer, N.E., Nelson, E.C., Grant, J.D., Duncan, A.E., Waldron, M., Bucholz, K.K., Madden, P.A.F., Heath, A.C., 2011. Common genetic and environmental contributions to post-traumatic stress disorder and alcohol dependence in young women. Psychol. Med. 41, 1497–1505.
Schimmenti, A., Billieux, J., Santoro, G., Casale, S., Starcevic, V., 2022. A trauma model of substance use: elaboration and preliminary validation. Addict. Behav. 134, 107431.
Somer, E., Altus, L., Ginzburg, K., 2010. Dissociative psychopathology among opioid use disorder patients: exploring the "chemical dissociation" hypothesis. Compr. Psychiatry 51, 419–425.
Stein, D.J., Koenen, K.C., Friedman, M.J., Hill, E., Mclaughlin, K.A., Petukhova, M., Ruscio, A.M., Shahly, V., Spiegel, D., Borges, G., Bunting, B., Caldas-De-Almeida, J. M., De Girolamo, G., Demyttenaere, K., Florescu, S., Haro, J.M., Karam, E.G., Kovess-Masfety, V., Lee, S., Matschinger, H., Mladenova, M., Posada-Villa, J., Tachimori, H., Viana, M.C., Kessler, R.C., 2013. Dissociation in posttraumatic stress disorder: evidence from the World Mental Health Surveys. Biol. Psychiatry 73, 302–312.
Steuwe, C., Lanius, R.A., Frewen, P.A., 2012. Evidence for a dissociative subtype of PTSD by latent profile and confirmatory factor analyses in a civilian sample. Depress Anxiety 29, 689–700.
Van Den Brink, W., 2015. Substance use disorders, trauma, and PTSD. Eur. J. Psychotraumatology 6, 27632.
Waller, N.G., Ross, C.A., 1997. The prevalence and biometric structure of pathological dissociation in the general population: taxometric and behavior genetic findings. J. Abnorm Psychol. 106, 499–510.
Wolf, E.J., Miller, M.W., Reardon, A.F., Ryabchenko, K.A., Castillo, D., Freund, R., 2012. A latent class analysis of dissociation and posttraumatic stress disorder: evidence for a dissociative subtype. Arch. Gen. Psychiatry 69, 698–705.