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Regular Article

Exploring trauma exposure and post-traumatic stress in university students of different identity statuses in Lithuania and Japan

Inga Truskauskaite[1], Kazumi Sugimura[2], Kazuaki Abe[2], Shogo Hihara[2], Yutaka Haramaki[2], Lina Jovarauskaite[1], Yuka Kamite[2] and Evaldas Kazlauskas[1]

[1]Institute of Psychology, Vilnius University, Vilnius, Lithuania and [2]Department of Psychology, Hiroshima University, Hiroshima, Japan

Abstract

Emerging adulthood is the time when identity questions are addressed. It is also a time of excessive stress and risk for mental health problems. Different identity statuses relate to different mental health outcomes. Yet, little research has addressed how identity status is interlinked with trauma exposure and post-traumatic stress reactions, especially in multicultural contexts. The current study aimed to explore whether different traumatic experiences are related to the current identity status of university students aged between 18 and 29 years and investigate to what extent trauma-exposed emerging adults of different identity statuses report symptoms of post-traumatic stress disorder (PTSD) and complex PTSD (CPTSD). In total, 2237 university students from Lithuania ($n = 791$) and Japan ($n = 1345$) participated in the current study. Identity profiles were revealed by using the Latent Class Analysis approach. Lithuania and Japan were comparable in terms of identity profiles and structure of PTSD/CPTSD. Trauma-exposed emerging adults reported a higher probability of being in *troubled diffusion* identity status; students in *achievement* identity status had a lower probability of CPTSD and lower rates of symptoms of disturbances in self-organization. The diffused identity of emerging adults from Lithuania and Japan is associated with trauma exposure, and positive identity is linked with fewer CPTSD reactions.

Keywords: Emerging adults; trauma; identity; PTSD; CPTSD

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Introduction

Identity formation is a primary developmental task in transitioning from adolescence into adulthood (Arnett, 2000; Erikson, 1968). Emerging adults, especially university students, tend to explore different life choices and reflect on them before making any enduring decision (Arnett, 2000). Nevertheless, emerging adults seem to differ in terms of how they address identity questions, and quite a diversity of identity statuses is reported in the previous studies (Crocetti et al., 2011; Schwartz et al., 2011, 2013), indicating that some emerging adults are more successful than others in processing identity choices.

Erikson (1968) defined identity as a dynamic interaction between the synthesis of one's identity and the potential for experiencing confusion. Marcia (1966) encapsulated this dynamic interaction by introducing the concept of identity status and defining identity formation through the interplay between two identity processes, namely, *exploration* (active search and investigation of values, beliefs, and purpose) and *commitment* (making identity-related choices). Depending on the excretion level of the two processes, four identity statuses were suggested: achievement (high exploration followed by high commitment), foreclosure (high commitment, low exploration), moratorium (high exploration and low commitment), and diffusion (low exploration and low commitment) (Marcia, 1966). Several decades later, Luyckx et al. (2008) introduced the five-dimensional model of identity development, comprising the following processes: exploration in breadth (ExB) (searching for possible identity-related choices), commitment making (CoM) (making a choice), exploration in depth (ExD) (evaluation of existing commitments), identification with commitment (IdCo) (being certain with current choices), and ruminative exploration (REx) (stressful/maladaptive exploration). Based on this model, six identity statuses were introduced that is *achievement* (high commitment and IdCo, moderate/high ExB and ExD, and and low REx), *foreclosure* (moderate/high commitment and IdCo, low/moderate ExB and ExD, low REx), *moratorium* (low/moderate commitment and IdCo, high ExB and ExD, and high REx), *troubled diffusion* (low commitment and IdCo, low/moderate ExB and ExD, and high REx), *carefree diffusion* (low/moderate commitment and IdCo, low ExB and ExD, and low/moderate REx), and *undifferentiated* identity status (all intermediate) (Crocetti et al., 2011; Luyckx et al., 2008; Sugimura, 2021).

Student years, for many, are a time of excessive stress, and multiple studies have reported that emerging adults are at high risk for developing mental disorders (Arnett et al., 2014). Previous studies have documented that young adults with different identity statuses also report differences in mental health outcomes

Corresponding author: Inga Truskauskaite; Email: inga.truskauskaite-kuneviciene@fsf.vu.lt

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(Schwartz et al., 2015), indicating the interplay between the mental health state and the ability to address identity questions successfully. The previous research has also demonstrated that dissatisfaction with current identity choices and identity-related uncertainty is linked with internalizing symptoms such as anxiety and depression and lower levels of well-being when firm identity commitments and satisfaction with one's place in life relate to better mental health (Crocetti et al., 2011; McLean et al., 2007; Schwartz et al., 2011). Nevertheless, little empirical research has addressed how identity status is reflected in trauma-exposed university students and whether the post-traumatic stress reactions also differ among emerging adults of different identity statuses.

One of the theoretical conceptualizations suggests that exposure to traumatic experiences in life, that is, facing or witnessing life or health-threatening catastrophic events or adversity (Weathers et al., 2013), encourages questioning and reevaluating current identity choices (Berman et al., 2020). Trauma-related identity reevaluation, on the one hand, may result in identity diffusion (Raemen et al., 2021; Truskauskaite-Kuneviciene et al., 2020); on the other hand, it may become a turning point and induce independence and self-maturity (Irwin, 2022; McLean et al., 2007). From the psychopathology perspective, identity could also be seen as a lens through which trauma is processed and may shape the response to traumatic experiences by leading it toward post-traumatic stress or post-traumatic growth (Berman et al., 2020). Indeed, some research on adult trauma survivors provided quantitative evidence that post-traumatic growth was interlinked with higher identity exploration (Bakaitytė et al., 2022), and higher post-traumatic stress disorder (PTSD) symptoms were linked with lower identity exploration and commitment as well as higher reconsideration of identity (Davies et al., 2023). Similarly, the evidence from qualitative research suggests that trauma survivors tend to form the lens through which they see themselves in the aftermath of trauma, indicating that even though trauma does not define the sense of self entirely, it indeed shapes the way the survivors understand and express themselves when moving forward (Shalka, 2019). This lens might also be seen as the narratives of trauma survivors that can be either self-reflective and contribute to meaning-making and integration of the traumatic experiences, in contrast to being ruminative, full of self-doubt, and criticism (Marin & Shkreli, 2019). Moreover, these narratives tend to differ across identity statuses with the self-reflective narrative being more characteristic of achievement and foreclosure statuses, while the ruminative narrative is more prevalent among trauma survivors in moratorium and diffusion statuses (Marin & Shkreli, 2019). In line with these findings, The Memory and Identity theory of CPTSD suggests that trauma exposure interacts with individual vulnerability, and high vulnerability would lead to negative identity which in turn may lead to post-traumatic stress (Hyland et al., 2023).

There were some efforts to bridge identity and psychopathology in adolescence and emerging adulthood (Verschueren et al., 2019). Similar to Berman's et al. (2020) theoretical conceptualization regarding the reciprocal relationships between trauma and identity, Verschueren et al. (2019) presented the model of the cyclic relationship between identity diffusion and psychopathology where both affect one another, ending up in a negative (or positive) spiral. Moreover, the theoretical conceptualization of identity development in the context of the risk and resilience framework (Motti-Stefanidi, 2015) suggested that adversity may serve as a risk factor for positive identity development when positive identity may serve as an asset when facing traumatic life events.

Trauma-exposed youth may construct their identities in adaptive or maladaptive ways; their mental health may or may not be severely compromised (Irwin, 2022). Thus, the links between trauma, identity, and post-traumatic stress may be complex. Thus, the current study aimed to explore whether different traumatic experiences are related to the development of current identity status and whether traumatized youth of different identity statuses report different post-traumatic stress reactions. To the best of our knowledge, no previous research has addressed the links between the identity status of trauma-exposed youth and the development of symptoms of PTSD. Moreover, as the ICD-11 included CPTSD as a new disorder following exposure to traumatic life events, the CPTSD symptoms were also investigated in relation to current identity status.

The study was conducted in two different cultures, Lithuania and Japan. Although the two countries have similar economic situations (www.gapminder.org), their cultural values differ. Compared to Japan, Lithuania scores higher in individualism (Hofstede et al., 2005), while Japan exhibits high collectivistic values (Triandis, 2018). In individualistic cultures, one tends to develop more personal agency, uniqueness, and higher accomplishments while also being exposed to high cultural demands of minimizing identity confusion; in contrast, in collectivistic cultures, the individual and group goals are seen as more interdependent; thus the pressure to exhibit personal autonomy and achievements are relatively moderate (Markus & Kitayama, 2010). Although the degree to which the separate self is promoted and valued within the two cultures (Kağıtçıbaşı, 2007), previous research shows that identity development might be comparable across the two countries (Hatano et al., 2016).

Trauma response highly depends on how cultures can create social-psychological mechanisms to assist trauma survivors (Wilson & Tang, 2007). Lithuania, a former Soviet Union country, has a history of political repressions and deeply entangled cultural trauma (Gailienė, 2019). Although several decades of political independence fostered the development of democratic values, like many other post-communist countries, Lithuania still exhibits signs of post-Soviet mentality that, at the institutional level, is characterized by the legitimation of immorality, ignorance, apathy, and lack of initiative (Klicperova-Baker & Kostal, 2018). This might be one of the reasons why the healthcare system in Lithuania still fails to identify and effectively treat post-traumatic stress (Kazlauskas et al., 2017). In contrast, being under constant threat of natural disasters (e.g., earthquakes), Japan shows many efforts to support community members after trauma exposure (Uchiumi et al., 2021).

Based on previous research, Lithuanian and Japanese adolescents exhibited similar post-traumatic reactions; nevertheless, more trauma exposure and relatively more PTSD/CPTSD reactions were reported in Lithuania compared to Japan (Kazlauskas et al., 2022). In our study, we expected the structure of PTSD and CPTSD to be comparable across countries in the sample of emerging adults, as previous research confirmed the post-traumatic stress reactions to be relatively universal (Karatzias et al., 2017). Nevertheless, we hypothesized that trauma exposure and post-traumatic stress reaction rates would be higher in Lithuania than in Japan.

Empirical research on links between trauma, identity, and post-traumatic stress reactions is still scarce. Nevertheless, previous research indicated that such interpersonal trauma as sexual violence might foster identity diffusion (Truskauskaite-Kuneviciene et al., 2020). Therefore, we expected that trauma

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Table 1. Sample characteristics ($N = 2136$)

	Lithuania ($n = 791$)		Japan ($n = 1345$)		
Variables	*n*	%	*n*	%	$\chi^2(1)$* / a.s.r.
Gender					11.7, $p = .001$
Male	164	20.7	368	27.4	3.4
Female	627	79.3	977	72.6	−3.4
Age range	18–29		19–21		
M (*SD*)	19.30 (1.41)			19.54 (0.61)	$t = -5.448$, df = 2134, $p < .001$
In partnership					54.28, $p < .001$
No	467	59.0	1000	74.3	7.4
Yes	324	41.0	345	25.7	−7.4
Usage of mental health services					128.27, $p < .001$
No	503	63.8	1139	84.7	11.0
Yes, but currently not	259	32.9	172	12.8	−11.1
Yes, currently visiting	26	3.3	34	2.5	−1.0
Lives with parents/guardians					0.240, $p = .625$
No	232	29.3	408	30.3	0.5
Yes	559	70.7	937	69.7	−0.5
Mother employment					642.98, $p < .001$
Permanent job	674	85.50	400	29.7	−24.9
Temporary job	29	3.70	594	44.2	19.8
Not working	67	8.50	276	20.5	7.3
I do not know/not applicable	18	2.30	75	5.6	3.6
Father employment					66.00, $p < .001$
Permanent job	593	75.30	1149	85.40	5.9
Temporary job	61	7.70	36	2.70	−5.4
Not working	48	6.10	21	1.60	−5.7
I do not know/not applicable	86	10.90	139	10.30	−0.4

Note. *M* = mean, *SD* = standard deviation, *a.s.r* = Adjusted standardized residual, *based on the Bonferroni correction, $p < .007$ indicates significant difference between groups.

exposure would be associated with diffused identity. Additionally, research shows that higher commitments are linked with less psychopathology (Schwartz et al., 2011). Therefore, we expected that achieved identity would relate to a lower probability of PTSD/CPTSD. Finally, previous research demonstrated the link between the symptoms of complex traumatization and impairment in self/identity (Luyten et al., 2020). Therefore, we expected that symptoms of disturbances in self-organization (DSO), specific to CPTSD, would differ more profoundly among identity statuses, emphasizing positive links between DSO symptoms and identity diffusion.

Method

Participants

In total, 2237 university students from Lithuania and Japan participated in the current study. Only the participants who filled the relevant measures and were within the age range of emerging adulthood (18–29) were included in the analyses. The final study sample consisted of 2136 emerging adults studying at universities (75.1% female; M_{age} (SD_{age}) = 19.45 (0.99) in Lithuania ($n = 791$) and Japan ($n = 1345$). The characteristics of the study participants, that is, gender, age, usage of mental health services, being in a partnership, living with parents/guardians, employment of both parents, in each country separately, and the comparison of these characteristics between countries are presented in Table 1.

Procedures

The ethical permissions from the Vilnius University Ethics Committee for Psychological Research in Lithuania and the Hiroshima University Ethics Committee for Psychological Research in Japan were obtained before data collection. Data were collected online using secure survey platforms. Data collection occurred between November 2020 and January 2021 in Lithuania and Japan in February 2021. Participants from Lithuania were recruited via email invitations with a link to an online survey using the national language. Participants from Japan were recruited through an online research company with one of the largest participant pools in Japan (MACROMILL; https://www.macromill.com/). Participants received an email including a link to an online survey from the research company. All participant gave their active, informed consent to participate in the study. No financial incentives were provided for participation in Lithuania, whereas 50 JPY (approximately 0.50 USD) was paid

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as a reward for participation in Japan. The research team was not affiliated with any of the study participants.

Measures

Identity processes

The short form of the Dimensions of Identity Development Scale (DIDS) (Luyckx et al., 2008) was used to assess identity processes. The shortened version of the scale includes 12 items, measuring five identity development processes: ExB (two items, e.g., "I am considering a number of different lifestyles that might suit me"), CoM (two items, e.g., "I have decided on the direction I am going to follow in my life"), ExD (three items, e.g., "I think about whether the aims I already have for life really suit me"), IdCo (two items, e.g., "My future plans give me self-confidence"), and REx (three items, e.g., "I keep wondering which direction my life has to take"). Each item is evaluated on a 5-point Likert scale, ranging from (1) "completely disagree" to (5) "completely agree." A confirmatory factor analysis (CFA) of a correlated five-factor model in a total study sample fitted data well (χ^2 (44) = 336.878, $p < 0.001$, CFI/TLI = 0.964/.945, RMSEA [90% CI] = 0.056 [0.050, 0.061], SRMR = 0.048). The Metric measurement invariance of the DIDS scale was established across two countries (see Supplementary Table S1). The DIDS subscales had adequate internal consistency in a total study sample as well as across countries (Lithuania/Japan), with Cronbach's alpha coefficients equal to 0.74 (0.67/0.77) for, 0.87 (0.83/0.88) for CoM, 0.71 (0.65/0.74) for ExD, 0.76 (0.83/0.71) for IdCo, and 0.78 (0.83/0.76) for REx scales.

Exposure to traumatic experiences

The revised version of the Life Events Checklist (LEC-R) (Weathers et al., 2013) was used to determine the lifetime exposure to traumatic experiences among study participants in Lithuania and Japan. The LEC-R is a self-report measure that assesses an individual's exposure to 18 potentially traumatic events over a lifetime, ranging from natural disasters to sexual and physical violence, as well as one unspecified event that participants could ask to the list. One item of the scale ("Serious injury, harm or death you caused to someone else") was not used in the current study due to the legal regulations valid in Japan. For each event, study participants selected if the event (1) "happened to me," (2) "witnessed it," (3) "learned about it," (4) "not sure," or (5) "doesn't apply." Participants who reported to have experienced (1) or witnessed (2) traumatic event were considered to be exposed to the traumatic event.

Symptoms of PTSD and CPTSD

The International Trauma Questionnaire (ITQ) (Cloitre et al., 2018) was used to assess the symptoms of ICD-11 PTSD and CPTSD. The ITQ is an 18-item self-report measure assessing the twelve symptom items measuring PTSD, CPTSD, and six functional impairment items. The PTSD symptom clusters: (1) Re-experiencing (Re, e.g., "Having upsetting dreams that replay part of the experience or are clearly related to the experience?"), (2) Avoidance (Av, e.g., "Avoiding internal reminders of the experience (for example, thoughts, feelings, or physical sensations)?"), and (3) Sense of Threat (SoT, e.g., "Being "super-alert," watchful, or on guard?") and DSO symptom clusters: (4) Affective Dysregulation (AD, e.g., "When I am upset, it takes me a long time to calm down"), (5) Negative Self-Concept (NSC, e.g., "I feel like a failure"), and (6) Disturbances in Relationship (DR, e.g., "I feel distant or cut off from people") are all comprised of two items each. Participants were asked to rate the ITQ items on a 5-point Likert scale ranging from (0) "Not at all" to (4) "Extremely," indicating how much a person was bothered over the past month by a particular symptom. Participants were also presented with three functional impairment (FI, e.g., "Affected your relationships or social life?") items associated with PTSD and three FI items associated with DSO symptoms on the same scale as symptom items. Symptoms of PTSD and DSO were considered clinically significant if the response was ≥2 at least on one of the two items representing PTSD/DSO symptoms (Cloitre et al., 2018). Based on the ITQ diagnostic algorithm, probable PTSD was diagnosed if all three PTSD symptoms were clinically significant and PTSD symptom-related functional impairment scores were significant (≥2) on at least one FI item (Cloitre et al., 2018). Probable CPTSD was diagnosed if an individual qualified for a diagnosis of PTSD, all three DSO symptoms were clinically significant, and DSO symptom-related FI was significant (≥2) on at least one of the FI items (Cloitre et al., 2018). PTSD diagnosis was excluded if the participant met the diagnostic criteria for CPTSD. A CFA of the correlated second-order PTSD and DSO latent factor model with three symptom clusters, Re, Av, and SoT, loaded on the PTSD latent factor, and the three DSO symptom clusters AD, NSC, and DR loaded on DSO latent factor in a total study sample fitted the data well ($\chi^2(47) = 163.15$, $p < .001$; CFI/TLI = 0.982/0.975; RMSEA [90% CI] = 0.040 [0.034–0.047]; SRMR = 0.030). The Metric measurement invariance of the ITQ scale was established across two countries (see Supplementary Table S1). The ITQ had adequate internal consistency in a total study sample as well as across countries (Lithuania/Japan), with Cronbach's alpha coefficients equal to 0.88 (0.89/0.89) for a full scale, 0.87 (0.90/0.86) for the PTSD subscale, and 0.86 (0.83/0.87) for DSO subscale.

Data analysis

The current study investigated how identity status in emerging adulthood is interlinked with lifetime trauma exposure in Lithuania and Japan. Also, we sought to explore how the identity status of trauma-exposed emerging adults from Lithuania and Japan is linked with a probable diagnosis of PTSD and CPTSD and current levels of PTSD/CPTSD symptoms. We first identified the identity statuses among emerging adults using the Latent Class Analysis (LCA) approach, which is intended for recognizing the qualitatively different subgroups of participants in the sample that share specific characteristics within the subgroups (Nylund et al., 2007). We classified the participants in terms of the current level in five identity processes, particularly ExB, CoM, ExD, IdCo, and REx. We used several criteria to decide on the number of latent classes. First, the Akaike Information Criterion and Bayesian Information Criterion statistics for a solution with k classes should be lower than for a solution with k–1 classes. Second, a statistically significant p-value of the adjusted Lo, Mandel, and Rubin test indicates improvement in fit between neighboring classes solutions after including an additional class.

In all analyses, we used the Entropy score, which indicates how accurately the particular model defines classes. Relatively higher Entropy values equal to or above 0.70 indicate a more accurate classification. When conducting the LCA, we used factor scores (Yang et al., 2010) obtained after performing the CFA of the DIDS scale. We first performed the LCA analysis in Lithuania and Japan separately; then, after replicating the statuses across the two countries, we repeated the LCA analysis in a total study sample.

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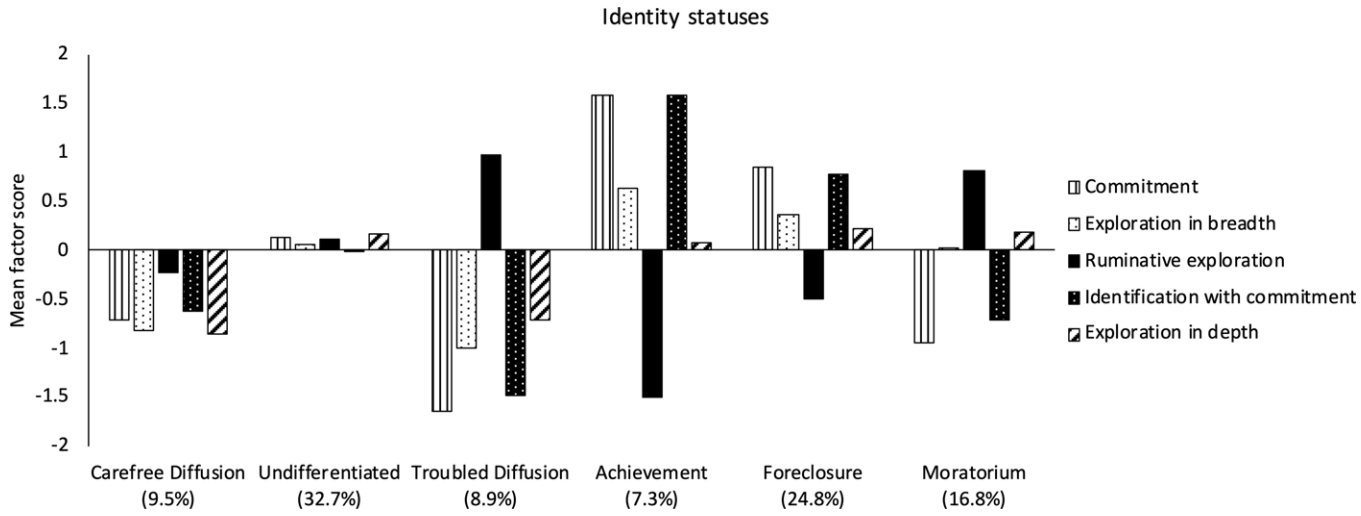

Figure 1. Identity profiles based on factor means of identity processes ($N = 2136$).

When conducting the analysis in a full study sample, we have accounted for complex sampling features (Asparouhov & Muthen, 2006), that is, clustering participants within two countries.

To indicate the links between identity status and trauma exposure, as well as probable PTSD/CTSD diagnosis, we conducted a series of univariate Pearson χ^2 tests. First, we compare the proportion of university students with different identity statuses within the groups of trauma-exposed versus not-exposed emerging adults; separate analyses were conducted for overall trauma exposure and every type of traumatic event. Further, we compared the proportion of university students with different identity statuses within the groups of probable PTSD/CPTSD diagnosis versus no diagnosis in a trauma-exposed subsample; two separate analyses were performed, and the participant with another diagnosis than the one of interest was omitted. Thus, each analysis was conducted in a slightly different subsample.

The study had no missing data due to the requirement to respond to all provided questions. The CFA model fit in all analyses was evaluated by using the Comparative Fit Index (CFI), the Tucker–Lewis Index (TLI), and the Root Mean Square Error of Approximation (RMSEA), following the goodness of fit recommendation, namely, CFI/TLI values higher than 0.90 indicated an acceptable fit and values higher than 0.95 represented a very good fit; RMSEA values below 0.08 indicate of an acceptable fit, and values less than 0.05 suggested a good fit (Kline, 2015). The CFA, LCA, and latent mean comparison analyses were conducted with Mplus 8.2 (Muthén and Muthén, 1998-2017); The Pearson χ^2 tests were performed with IBM SPSS 24.0.

Results

Trauma exposure and post-traumatic stress in Lithuania and Japan

To compare Lithuania and Japan in terms of their traumatic experiences, we first identified the prevalence of overall trauma exposure and exposure to specific traumatic events in the total study sample and two countries separately. The trauma exposure prevalence rates are presented in Supplementary Table S2. The results indicated that more Lithuanian students were exposed to at least one lifetime traumatic event. More Japanese students experienced a natural disaster in comparison to Lithuanian students. More Lithuanian students were exposed to transportation accident, serious other accident, childhood physical abuse, physical assault, assault with a weapon, unwanted or uncomfortable sexual experience, life-threatening illness or injury, sudden violent death, and sudden accidental death compared to Japanese students. Lithuanian and Japanese emerging adults were comparable in terms of exposure to fire or explosion, exposure to a toxic substance, childhood sexual abuse, sexual assault, combat or exposure to a war zone, captivity, and severe human suffering.

Out of those exposed to at least one traumatic event ($N = 1551$), 18.7 % matched the criteria for probable either PTSD (6.9 %) or CPTSD (11.8 %) diagnosis. The prevalence rates of PTSD/CPTSD were comparable across the two countries ($\chi^2(2) = 2.71$, $p = .258$). Prevalence of PTSD and CPTSD in Lithuania/Japan were found to be 8.1/6.1% (adj.stand.res. = 1.5) and 10.9/12.4% (adj.stand. res. = −0.9), respectively. The descriptive statistics of PTSD/CPTSD symptoms are presented in Supplementary Table S3.

Identity statuses in Lithuania and Japan

To check if a person-oriented approach, that is, dividing the participants into identity status groups for further analysis, is most appropriate for the current data, we conducted a series of point-biserial correlations, testing the links between trauma exposure as well as PTSD/CPTSD diagnosis and identity processes (ExB, CoM, ExD, IdCo, and REx). The results (see Supplementary Table S4) showed that overall, the links between identity processes and trauma exposure were weak (between .01 and 0.2) or neglectable (<0.1), indicating that the person-oriented approach might be more beneficial for further data analysis.

The LCA used to identify identity statuses based on current levels in identity processes indicated that both in Lithuania and Japan, the six classes' solution fitted the data best (see Supplementary Table S5). Moreover, similar patterns emerged in terms of combination in identity processes. Therefore, seeking consistency in study findings, we reran the six classes' solution in a total study sample (see Figure 1). The six classes' solution yielded a high classification quality (Entropy = .85). The resulting classes were comparable with identity statuses reported in previous research that used the same identity measures (e.g., Crocetti et al., 2011; Sugimura, 2021). Therefore, despite slight differences in levels of identity processes within identity statuses in the current

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study, we labeled the classes using the same terminology for consistency across the identity research. The most numerous status (32.7%) with intermediate levels in all identity processes was labeled *undifferentiated*. The status with relatively high levels in CoM and IdCo, intermediate levels of ExB and ExD, and relatively low levels of REx was labeled as *foreclosure* (24.8%). The status with low levels in CoM and IdCo, intermediate levels of ExB and ExD, and high levels of REx was labeled *moratorium* (16.8%). The status with low levels in all identity processes was labeled *carefree diffusion* (9.5%). The status with low levels in CoM and IdC, ExB and ExD, and high levels of REx was labeled *troubled diffusion* (8.9%). Finally, the least numerous status (7.3%) with high levels in CoM and IdC, high levels in ExB, intermediate level in ExD, and low levels of REx was labeled *achievement*.

The distribution across identity statuses differed between Lithuanian and Japanese students ($\chi^2(2) = 134.18$, $p < .001$). *Undifferentiated* identity status, *foreclosure*, and *achievement* were more prevalent among Lithuanians (35.7%, 29.7%, and 12.1%, respectively), compared to Japanese (31.0%, 21.9%, and 4.5%, respectively) (adj.stand.res. = −2.2, −4.0, and −6.6, respectively). The *moratorium*, *carefree diffusion*, and *troubled diffusion* were more prevalent in Japan (18.2%, 13.2%, and 11.2%, respectively), compared to Lithuania (14.3%, 3.2%, and 5.1%, respectively) (adj.stand.res. = −2.3, −7.7, and −4.8, respectively). The descriptive statistics of identity processes are presented in Supplementary Table S3.

Links between trauma exposure, PTSD/CPTSD diagnosis, post-traumatic stress symptoms, and identity status

Trauma exposure and identity status

To investigate the links between trauma exposure and identity status, we compared the distribution of students in every identity status within trauma (or particular event) exposure versus non-exposure groups. Seeking sufficient statistical power, only the traumatic events with an exposure prevalence of at least 5% of the sample were included in the analyses. The links between trauma exposure and identity statuses are presented in Table 2. The results indicated that the identity status of *carefree diffusion* was more prevalent among trauma non-exposed university students than those exposed to at least one traumatic event.

In contrast, *troubled diffusion* was more prevalent among those exposed to at least one traumatic event than trauma non-exposed students. Particularly, *carefree diffusion* was less prevalent among those exposed to transportation accident, physical assault, unwanted or uncomfortable sexual experience, life-threatening illness or injury, severe human suffering, and sudden accidental death when compared to students who did not have such experiences. Also, *troubled diffusion* was more prevalent and *achievement* less prevalent among students exposed to natural disaster compared to students without such experiences. Moreover, the results indicated that the identity status of *foreclosure* was more prevalent among students exposed to fire or explosion, transportation accident, serious other accident, and life-threatening illness or injury compared to students not exposed to such experiences. Furthermore, the identity status of *achievement* was more prevalent among those exposed to childhood physical abuse and physical assault. Finally, both *achievement* and *foreclosure* were more prevalent among those exposed to sudden accidental death when compared to those without such experiences.

PTSD/CPTSD diagnosis and identity status

To indicate the links between probable PTSD and CPTSD diagnosis, we compared the distribution of students in every identity status within the diagnosis group versus no-diagnosis groups. Only the students exposed to at least one traumatic event were included in the analyses. The links between probable diagnosis and identity status are presented in Table 2. The results indicated that the distribution across identity statuses was comparable across PTSD and no-diagnosis groups. Nevertheless, *undifferentiated* identity status was more prevalent, and *achievement* was less prevalent in the CPTSD group compared to the no-diagnosis group.

PTSD/CPTSD symptoms and identity status

The mean sum scores of PTSD and DSO symptoms across the identity statuses are presented in Table 3. Only the students exposed to at least one traumatic event were included in the analyses. Prior to comparing the latent mean scores of ITQ subscales among identity status groups, we tested the measurement invariance of the CFI model with all correlated ITQ subscales. The scalar measurement invariance was established (Configural vs. Metric $\Delta CFI = 0$, $\Delta RMSEA = 0.002$; Metric vs. Scalar $\Delta CFI = 0.003$, $\Delta RMSEA = 0.001$). The comparison of latent mean scores yielded no differences among identity status groups in terms of levels of PTSD symptoms. However, the identity status groups differed in levels of symptoms of DSO symptoms. The *troubled diffusion* group reported higher levels of NSC and DR compared to all other identity statuses (latent means (NSC/DR): *moratorium* = −.47 ($p = .001$)/−.29 ($p = .035$); *undifferentiated* = −.70/−.46 ($p < .001$); *carefree diffusion* = −.73/−.59 ($p < .001$); *foreclosure* = −1.04/−.73 ($p < .001$); *achievement* = −1.40/−.74 ($p < .001$) as well as higher levels of AD, compared to the *foreclosure* group (latent mean = −.20, $p = .044$). Higher levels of AD were also reported in the *undifferentiated* identity status group compared to the *carefree diffusion* group (latent mean = −.21, $p = .049$). The *undifferentiated* identity status group also reported higher levels in all DSO symptoms compared to the *foreclosure* group (latent means (AD/NSC/DR) = −.16 ($p = .018$)/−.34 ($p < .001$)/−.28 ($p = .001$)) as well as higher levels of NSC, compared to *achievement* group (latent mean = −.71, $p < .001$). Students in *moratorium* identity status reported higher levels of NSC and DR, compared to *foreclosure* (latent means (NSC/DR) = −.57/.44 ($p < .001$)) and *achievement* (latent means (NSC/DR) = −.93 ($p < .001$)/−.45 ($p = .004$)) groups. Also, the *moratorium* group reported higher levels of NSC compared to the *undifferentiated* identity status group (latent mean = −.22, $p = .029$) and higher levels of DR compared to the *carefree diffusion* group (latent mean = −.30, $p = .027$). Further, the *carefree diffusion* group reported higher levels of NSC in comparison to *foreclosure* (latent mean = −.35, $p = .007$) and *achievement* (latent mean = −.70, $p < .001$) groups. Finally, the *foreclosure* group reported higher levels of NSC than the *achievement* group (latent mean = .37, $p = .002$).

Discussion

The current study aimed to explore trauma exposure among university students of different identity statuses from Lithuania and Japan, as well as investigate whether trauma-exposed emerging adults of different identity statuses report differences in post-traumatic stress reactions. Overall, we found that trauma-exposed university students were more likely to be in *troubled diffusion*

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Table 2. The proportions of participants in the identity status groups within exposure to traumatic experiences groups and PTSD/CPTSD diagnostic groups

	Identity statuses						Significance statistics	
	Undifferentiated	*Foreclosure*	*Moratorium*	*Carefree diffusion*	*Troubled diffusion*	*Achievement*	$\chi^2(1)$	*p*
Exposure to traumatic experiences (TE) (*n* = no/yes), *N* = 2136*	% within exposure to TE (no/yes) groups (a.s.r.)							
Natural disaster (*n* = 1573/563)	33.5/30.6 (−1.3)	25.4/23.1(−1.1)	16.1/18.7(1.4)	9.4/9.8(0.3)	**7.5/12.8(3.8)**	**8.1/5.2(−2.3)**	21.58	.001
Fire or explosion (*n* = 1933/203)	**33.4/26.6(−2.0)**	**24.2/31.0(2.2)**	17.1/13.8(−1.2)	9.6/8.9(−0.3)	8.8/9.4(0.2)	7.0/10.3(1.8)	10.24	.069
Transportation accident (*n* = 1675/461)	33.7/29.1(−1.9)	**23.5/29.7(2.8)**	17.0/15.8(−0.6)	**10.3/6.7(−2.3)**	8.6/10.0(0.9)	6.9/8.7(1.3)	15.48	.009
Serious other accident (*n* = 1942/194)	33.2/28.4(−1.4)	**24.0/32.5(2.6)**	17.1/12.9(−1.5)	9.7/7.2(−1.1)	8.9/9.3(0.2)	7.1/9.8(1.4)	11.23	.047
Childhood physical abuse (*n* = 1877/259)	33.1/30.1(−1.0)	24.3/28.2(1.3)	16.8/16.6(−0.1)	10.0/6.2(−1.9)	9.0/8.1(−0.5)	**6.8/10.8(2.3)**	10.57	.061
Physical assault (*n* = 1849/287)	32.7/33.1(0.1)	24.2/28.6(1.6)	17.2/13.9(−1.4)	**10.1/5.9(-2.2)**	9.1/7.3(−1.0)	**6.7/11.1(2.7)**	15.60	.008
Other unwanted or uncomfortable sexual experience (*n* = 1880/256)	32.1/37.1(1.6)	24.7/25.4(0.2)	16.6/17.6(0.4)	**10.0/5.9(−2.1)**	9.3/6.3(−1.6)	7.2/7.8(0.3)	8.32	.139
Life-threatening illness or injury (*n* = 1936/200)	33.2/28.5(−1.3)	**24.0/32.5(2.6)**	16.6/18.0(0.5)	**10.1/4.0(-2.8)**	9.0/8.0(−0.5)	7.1/9.0(1.0)	14.76	.011
Severe human suffering (*n* = 1687/449)	33.3/30.7(−1.0)	24.4/26.3(0.8)	16.5/17.6(0.5)	**10.3/6.5(−2.5)**	8.4/10.7(1.5)	7.1/8.2(0.9)	9.71	.084
Sudden accidental death (*n* = 2078/58)	33.0/31.8(−0.5)	**23.8/28.4(2.1)**	17.0/16.1(−0.4)	**10.4/6.3(−2.7)**	9.2/8.0(−0.8)	**6.7/9.4(2.0)**	14.71	.012
Any other very stressful event or experience (*n* = 1602/534)	33.3/30.9(−1.0)	25.1/24.0(−0.5)	16.5/17.4(0.5)	10.0/7.9(−1.5)	**8.2/11.0(2.0)**	6.8/8.8(1.5)	9.02	.108
At least one traumatic event (*n* = 625/1511)	34.4/32.0(−1.1)	23.8/25.2(0.7)	14.9/17.5(1.5)	**13.8/7.7(−4.3)**	**6.9/9.7(2.1)**	6.2/7.7(1.2)	25.20	<.001
Diagnosis (*n* = no/yes), *N* = 1511	% within diagnosis (no/yes) groups (a.s.r.)							
PTSD (*n* = 1407/104)	31.1/28.8(−0.5)	25.4/29.8(1.0)	18.3/15.4(−0.7)	7.7/7.7(0.0)	9.2/9.6(0.1)	8.2/8.7(0.2)	1.38	.927
CPTSD (*n* = 1332/179)	**31.1/40.2(2.4)**	25.4/21.2(−1.2)	18.3/13.4(−1.6)	7.7/7.8(0.0)	9.2/13.4(1.8)	**8.2/3.9(−2.0)**	13.88	.016

Note. PTSD = post-traumatic stress disorder, DSO = disturbances in self-organization, *a.s.r* = adjusted standardized residual (those that exceed ± 2 and indicate statistical significance are in bold), *when analyzing exposure to traumatic experiences, based on the Bonferroni correction, $p <= .004$ indicates the significant overall difference between groups.

Table 3. Mean scores of PTSD/CPTSD symptoms across the identity statuses groups

	Undifferentiated (n = 484)	*Foreclosure* (n = 381)	*Moratorium* (n = 265)	*Carefree diffusion* (n = 117)	*Troubled diffusion* (n = 147)	*Achievement* (n = 117)
Symptoms			*M (SD)*			
PTSD						
Re-experiencing	2.15(2.18)	2.19(2.26)	1.98(2.28)	1.84(1.89)	2.10(2.43)	1.85(2.44)
Avoidance	2.31(2.39)	2.18(2.42)	2.11(2.27)	2.12(2.38)	2.42(2.69)	2.37(2.94)
Sense of Threat	2.91(2.38)	2.72(2.47)	2.77(2.36)	2.53(2.28)	2.99(2.60)	2.83(2.76)
DSO						
Affective Dysregulation	2.91(1.92)^{a}	2.59(1.97)^{b}	2.76(2.05)^{ab}	2.50(2.00)^{b}	3.01(2.26)^{a}	2.73(2.12)^{ab}
Negative Self-Concept	3.19(2.58)^{a}	2.50(2.40)^{b}	3.65(2.73)^{c}	3.13(2.39)^{ac}	4.59(2.96)^{d}	1.77(2.25)^{e}
Disturbances in Relationship	3.36(2.22)^{ac}	2.81(2.27)^{b}	3.70(2.40)^{c}	3.08(2.26)^{ab}	4.30(2.65)^{d}	2.79(2.72)^{ab}

Note. M = mean, SD = standard deviation, PTSD = post-traumatic stress disorder, DSO = disturbances in self-organization, ^{a,b,c,d,e} = different letters indicate significant latent mean differences between identity status groups, while same letters indicate no statistically significant difference.

identity status. Also, we discovered that trauma-exposed students in *achievement* identity status were less likely to report probable CPTSD diagnosis. Additionally, emerging adults with *troubled diffusion* identity status reported the highest levels of NSC and DR. In contrast, students with *achievement* identity status reported the lowest levels of NSC.

The results of the current study expand the understanding of how trauma exposure relates to identity development. On the one hand, the results of the study support previous findings (Raemen et al., 2021; Truskauskaite-Kuneviciene et al., 2020) and theoretical conceptualizations (Berman et al., 2020; Motti-Stefanidi, 2015), suggesting that trauma exposure may potentially be seen as a risk factor, fostering identity diffusion. Nevertheless, such traumatic experiences as transportation or other accident, injury, or unexpected death of someone close may boost self-maturity (McLean et al., 2007) and, as reflected in the findings of the current study, may foster the commitment to current identity choices and induce *foreclosure* or *achievement* in terms of the identity status. Nevertheless, the directionality of links between trauma and identity should be interpreted cautiously, as based on previous research, disturbed identity and seeing oneself as bad or unworthy may also increase the risk of interpersonal trauma (Luyten et al., 2020).

The findings of our study also contribute to the idea that identity may serve as an asset when exposed to traumatic events (Motti-Stefanidi, 2015), as it showed that diagnostic levels of CPTSD are less likely in students with *achievement* identity status. Also, the results indicated that overall identity is interlinked with symptoms of DSO but not symptoms of PTSD, suggesting that positive identity is associated with less CPTSD reactions, encompassing affect dysregulation, negative self-views, and troubled relationships with others. These results are in line with previous findings, indicating that high levels of identity commitment relate to lower levels of loneliness (Kaniušonytė et al., 2019) and higher levels of self-esteem (Schwartz et al., 2013). Nevertheless, these results should be interpreted cautiously, as for some students, CPTSD reactions might have emerged before the current identity status has developed. Moreover, previous research indicates that the reactions specific to complex traumatization may be linked with impairment in self/identity (Luyten et al., 2020). Therefore, the idea that these reactions may diminish identity development cannot be rejected and should be further explored in longitudinal research.

From the intercultural perspective, our study revealed that the identity statuses, as well as structure and diagnostic levels of post-traumatic reactions, are universal across two cultural contexts. Nevertheless, the experiences of university students in the two countries are different. More Lithuanians were exposed to trauma, specifically to interpersonal trauma, such as physical abuse in childhood or adulthood. These findings may indicate a still present post-Soviet mentality in the country that, on the interpersonal level, is characterized by disrespect, prejudice, distrust, envy, hatred, and rudeness (Klicperova-Baker & Kostal, 2018). Also, commitment-related identity statuses were more prevalent in Lithuania, while diffusion-related identity statuses, in line with previous research (Hatano & Sugimura, 2017), were more characteristic of Japanese students. These findings possibly reflect cultural differences between the two countries. Compared to Japan, Lithuania tends to exhibit individualistic values to a greater extent (Hofstede et al., 2005). Therefore, Lithuanian university students might feel more pressured to commit to identity choices sooner than Japanese. Additionally, in Japan's more collectivistic culture (Triandis, 2018), personal identity choices might be entangled with the needs of significant others and society (Sugimura et al., 2021); this could be the reason why more uncertainty regarding identity choices was observed among Japanese students. As results demonstrated, Lithuanian students were also more likely to positively explore possible identity choices, which is in line with previously reported cultural differences among countries in terms of how much the separate self is promoted and valued (Kağıtçıbaşı, 2007). Nevertheless, younger generations in Japan tend to exhibit more individualistic values compared to the older ones and more prevalent identity diffusion in Japan, when compared to Lithuania, might be a reflection of an intergenerational conflict between Japanese students and their parents (Sugimura, 2021). It should be noted that these are possible interpretations that could be tested in future research.

The results of the current study should be seen in light of its strengths and limitations. The intercultural study in a relatively big sample of emerging adults from educational contexts allowed for exploring the universality of trauma and identity across cultures. Nevertheless, the results regarding the links between trauma,

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identity, and PTSD/CPTSD reactions should be interpreted with caution, as the study's cross-sectional nature did not allow us to test these links over time. Therefore, longitudinal studies are needed to address these questions more comprehensively and test possible cyclic links between identity and post-traumatic stress (Verschueren et al., 2019). Additionally, although both Lithuanian and Japanese students were mainly freshmen, the samples were not entirely comparable regarding demographic characteristics. Particularly, in Japan, more males participated in the current study compared to Lithuania; more Lithuanian participants were in romantic partnership compared to Japan. As previous studies show that females report more PTSD/CPTSD than males, also higher loneliness is a risk factor for PTSD/CPTSD (Kazlauskas et al., 2022), the gender and partnership status differences in our sample could have affected the results; thus, the findings of our study regarding the prevalence rates of PTSD/CPTSD should be generalized cautiously, by taking into account the features of our sample. In addition, the Scalar measurement invariance across countries was not established for the scales used. Therefore, in the current study, it was impossible to compare the levels of PTSD/DSO symptoms or the identity processes between Lithuania and Japan. The measurement of these constructs in cross-cultural contexts should be addressed in future research. Also, the post-traumatic stress reactions were measured with self-report questionnaires. Thus, future research should consider using diagnostic interviews to detect PTSD/CPTSD. Additionally, as early or complex trauma might potentially have more significant effects on identity formation (e.g., Luyten et al., 2020), future research should also include the age and the duration of experiences in trauma exposure measurement. This would also allow to compare the identity formation of emerging adults with more and less severe traumatization. Finally, it should be noted that even though we used the same terminology regarding identity statuses that was introduced by previous research (e.g., Crocetti et al., 2011; Sugimura, 2021), some slight differences (e.g., intermediate levels of ExB and Depth in Moratorium status when previous studies reported high levels of all types of Exploration). Therefore, the comparison of these results should be made by considering these differences.

Despite these limitations, the current study provided preliminary but important evidence regarding the links between trauma exposure and identity development, suggesting that overall traumatic experiences may hinder positive identity development. Moreover, the study findings indicate that a positive identity may serve as an internal asset when exposed to trauma, specifically by protecting against CPTSD reactions or, alternatively, trauma therapy might contribute to the development of a positive identity in emerging adulthood. These results suggest that, potentially, both trauma-informed educational environments as well as attention to identity formation when addressing post-traumatic stress may contribute to better mental health in emerging adulthood.

Supplementary material. The supplementary material for this article can be found at https://doi.org/10.1017/S095457942300161X.

Data availability. The data that support the findings of this study are available from the corresponding author, [I.T.], upon reasonable request.

Author's contribution. All authors developed the study concept and contributed to the study design. Testing and data collection were performed by I.T., S.H., and K.A.; I.T. performed the data analysis. I.T. and K.S. carried out the interpretation of the results under the supervision of E.K. and Y.K.; I.T. drafted the paper; K.S., S.H., Y.K., K.A., Y.H., L.J., and E.K. provided critical revisions. All authors approved the final version of the paper for submission.

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Ethical standards. The authors assert that all procedures contributing to this work comply with the ethical standards of the relevant national and institutional committees and with the Helsinki Declaration of 1975, as revised in 2008.

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