Psychological Medicine

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Original Article

Cite this article: Hasking, P., Kiekens, G., Petukhova, M. V., Albor, Y., Al-Hadi, A., Alonso, J., Al-Saud, N., Altwaijri, Y., Andersson, C., Atwoli, L., Ayuya Muaka, C., Báez-Mansur, P., Ballester, L., Bantjes, J., Baumeister, H., Bendtsen, M., Benjet, C., Berman, A., Bruffaerts, R., Carrasco, P., Chan, S., Cohut, I., Covarrubias Díaz Couder, M., Cristóbal-Narvaez, P., Cuijpers, P., David, O., Dong, D., Ebert, D., Gaete, J., García Forero, C., Gutiérrez-García, R., Haro, J., Hunt, X., Hurks, P., Husky, M., Jaguga, F., Jansen, L., Jiménez-Pérez, A., Kählke, F., Klinkenberg, E., Langer, Á., Lee, S., Lima, R. A., Liu, Y., Lochner, C., Mac-Ginty, S., Martínez, V., Mason, A., McLafferty, M., Mori, T., Murray, E., Musyoka, C., Nedelcea, C., Núñez, D., O'Neill, S., Piqueras, J., Popescu, C., Rapsey, C., Robinson, K., Roca, M., Rodriguez-Jimenez, T., Salemink, E., Sampson, N., Scarf, D., Siu, O.-l., Stein, D., Struijs, S. Y., Tomoiaga, C., Valdés-García, K., van der Heijde, C., Vigo, D., Voorspoels, W., Wang, A., Wong, S., Nock, M., Kessler, R., & World Mental Health – International College Student collaborators (2025). The relationships between sporadic and repetitive non-suicidal self-injury and mental disorders among first-year college students: results from the World Mental Health International College Student Initiative. *Psychological Medicine*, **55**, e280, 1–15
https://doi.org/10.1017/S0033291725100688

Received: 14 January 2025
Revised: 15 April 2025
Accepted: 14 May 2025

Keywords:
college students; non-suicidal self-injury; NSSI; mental disorders

Corresponding author:
Penelope Hasking;
Email: penelope.hasking@curtin.edu.au

P.H. and G.K. equal lead authors.

[+]The WMH-ICS collaborators are: Elsie Breet, Guilherme Borges, Sergio Cruz-Hernández, Nadia Garnefski, Margalida Gili, Praxedis Cristina Hernández Uribe, Karen Jacobs, Vivian Kraaij, Irene Léniz, Maria Elena Medina-Mora, Iris Ruby Monroy, Lonna Munro, Richard J. Munthali, Maria Abigail Paz-Peréz, Ana Paula Prescivalli, Marisa Rebagliato, Eunice Vargas-Contreras.

The relationships between sporadic and repetitive non-suicidal self-injury and mental disorders among first-year college students: results from the World Mental Health International College Student Initiative

Penelope Hasking[1], Glenn Kiekens[2,3,4], Maria V. Petukhova[5], Yesica Albor[6], Ahmad Al-Hadi[7], Jordi Alonso[8,9,10], Nouf Al-Saud[11], Yasmin Altwaijri[11], Claes Andersson[12], Lukoye Atwoli[13], Caroline Ayuya Muaka[14], Patricia Báez-Mansur[15], Laura Ballester[8,10], Jason Bantjes[16,17], Harald Baumeister[18], Marcus Bendtsen[19], Corina Benjet[6], Anne Berman[20], Ronny Bruffaerts[21,22], Paula Carrasco[10,23], Silver Chan[24], Irina Cohut[25], Maria Covarrubias Díaz Couder[26], Paula Cristóbal-Narvaez[27], Pim Cuijpers[28,29], Oana David[29,30], Dong Dong[31], David Ebert[32], Jorge Gaete[33,34], Carlos García Forero[35], Raúl Gutiérrez-García[36], Josep Haro[27,37], Xanthe Hunt[16,38], Petra Hurks[39], Mathilde Husky[40], Florence Jaguga[41], Leontien Jansen[21], Ana Jiménez-Pérez[42], Fanny Kählke[43], Elisabeth Klinkenberg[44], Álvaro Langer[33,45], Sue Lee[5], Rodrigo Antunes Lima[46], Yan Liu[47], Christine Lochner[48], Scarlett Mac-Ginty[33,49], Vania Martínez[33,50], Andre Mason[51], Margaret McLafferty[52,53], Tiana Mori[54], Elaine Murray[52], Catherine Musyoka[55], Caitalin Nedelcea[56], Daniel Núñez[33,57], Siobhan O'Neill[58], José Piqueras[59], Codruta Popescu[60], Charlene Rapsey[51], Kealagh Robinson[61], Miquel Roca[62], Tiscar Rodriguez-Jimenez[63], Elske Salemink[64], Nancy Sampson[5], Damian Scarf[65], Oi-ling Siu[66], Dan Stein[17,67], Sascha Y. Struijs[28], Cristina Tomoiaga[29], Karla Valdés-García[68], Claudia van der Heijde[69], Daniel Vigo[54,70], Wouter Voorspoels[21], Angel Wang[54], Samuel Wong[31], Matthew Nock[71], Ronald Kessler[5] and World Mental Health – International College Student collaborators[+]

Abstract

Background. Non-suicidal self-injury (NSSI) is associated with mental disorders, yet work regarding the direction of this association is inconsistent. We examined the prevalence, comorbidity, time–order associations with mental disorders, and sex differences in sporadic and repetitive NSSI among emerging adults.

Methods. We used survey data from n = 72,288 first-year college students as part of the World Mental Health-International College Student Survey Initiative (WMH-ICS) to explore time–order associations between onset of NSSI and mental disorders, based on retrospective age-of-onset reports using discrete-time survival models. We distinguished between sporadic (1–5 lifetime episodes) and repetitive (≥6 lifetime episodes) NSSI in relation to *DSM-5* mood, anxiety, and externalizing disorders.

Results. We estimated a lifetime NSSI rate of 24.5%, with approximately half reporting sporadic NSSI and half repetitive NSSI. The time–order associations between onset of NSSI and mental disorders were bidirectional, but mental disorders were stronger predictors of the onset of NSSI (median RR = 1.94) than vice versa (median RR = 1.58). These associations were stronger among individuals engaging in repetitive rather than sporadic NSSI. While associations between NSSI and mental disorders generally did not differ by sex, repetitive NSSI was a stronger predictor for

the onset of subsequent substance use disorders among females compared to males. Most mental disorders marginally increased the risk for persistent repetitive NSSI (median RR = 1.23).
Conclusions. Our findings offer unique insights into the temporal order between NSSI and mental disorders. Further work exploring the mechanism underlying these associations will pave the way for early identification and intervention of both NSSI and mental disorders.

Introduction

In 2013, the American Psychiatric Association (APA) included non-suicidal self-injury (NSSI), defined as the deliberate damage to body tissue without suicidal intent (e.g. cutting and hitting oneself; ISSS, 2024), as a condition warranting further research in the fifth edition of the *Diagnostic and Statistical Manual of Mental Disorders* (*DSM-5*; APA, 2013). An NSSI Disorder diagnostic code was then added to the updated *DSM-5-TR* (APA, 2022). Over the last decade, NSSI has garnered increased attention worldwide. Epidemiological studies have documented that 17–20% of adolescents report ever engaging in NSSI (Farkas, Takacs, Kollárovics, & Balázs, 2023; Moloney et al., 2024), with onset typically occurring in mid-adolescence but with a second peak onset in the early twenties (Gandhi et al., 2018; Kiekens et al., 2019). Consistent with this, Kiekens et al. (2023b) observed a lifetime prevalence of NSSI of 17.7% among 20,842 first-year college students, with 8.4% self-injuring at least once in the past year. Despite the high lifetime prevalence of NSSI, only 2.3% of students self-injured at least 5 times in the past year (i.e. *DSM-5* frequency criterion; Kiekens, Hasking, et al., 2023b). While there is ongoing empirical debate about the DSM-5 NSSI disorder criteria (Lengel, Ammerman, & Washburn, 2025; Muehlenkamp, Brausch, & Kalgren, 2024), prior work that assessed all criteria estimated its prevalence at 0.8% among college students (Kiekens et al., 2018). This low prevalence of threshold NSSI underscores substantial variability in the frequency and severity of NSSI among students with a lifetime history of the behavior.

The early college years are marked by a general heightened risk for the onset of mental disorders (Auerbach et al., 2018). While neurodevelopmental and anxiety disorders typically have peak onsets before age 18, mood disorders, as well as alcohol and drug use disorders, peak between the ages of 19 and 21 (Solmi et al., 2022). A recently published report from the World Mental Health International College Student Survey Initiative (WMH-ICS), a series of cross-national epidemiological surveys among college students, stated that two-thirds of first-year students meet the criteria for at least one *DSM-5* mental disorder. Of those reporting a prior mental disorder, 90% continue to meet criteria within the last 12 months (Mason et al., 2025), a rate higher than observed among adolescents (Kessler et al., 2012).

Given that NSSI is typically used to cope with unwanted or intense emotions (Taylor et al., 2018), it is not surprising that NSSI is highly comorbid with a range of mental disorders (Benjet et al., 2017; Bentley, Cassiello-Robbins, Vittorio, Sauer-Zavala, & Barlow, 2015). Indeed, recent cross-national studies suggested that 60–81% of college students who self-injure have at least one mental disorder (Kiekens et al., 2018; Kiekens, Hasking, et al., 2023b). However, findings regarding the nature, specificity, and generalizability of this association have been mixed. First, while some prospective studies indicate that mental disorders increase the risk of subsequent onset of NSSI (Fox et al., 2015; Kiekens et al., 2019), others indicate that a history of NSSI may be a marker for the subsequent onset of mental disorders (Daukantaitė et al., 2020; Turner, Helps, & Ames 2022). Of course, both directions may be true when we consider associations with specific mental disorders. For instance, a prior WMH-ICS report found that anxiety, mood, and substance use disorders increased risk for subsequent onset of NSSI, whereas onset of NSSI also increased risk for subsequent mental disorders (Kiekens, Hasking, et al., 2023b). However, this study did not consider the specificity of associations between students with varying episodes of lifetime and 12-month NSSI.

Second, it may be that students who report more frequent episodes of NSSI are at higher developmental risk than those who engage in NSSI sporadically. Adolescents who engage in repetitive NSSI (i.e. five or more episodes) are more likely than those who engage in sporadic NSSI to continue this behavior into emerging adulthood (Daukantaitė et al., 2020). Wilkinson, Qiu, Neufeld, Jones, and Goodyer (2018) observed that repetitive NSSI predicted subsequent depression, while sporadic NSSI predicted the onset of anxiety disorders. More recently, Kiekens et al. (2023a) observed that students who followed a stable repetitive pattern of NSSI (i.e. five or more episodes per year) during their first two college years were more likely than those with a sporadic or ceased pattern to report mental disorders, functional impairment, and suicidal thoughts and behaviors in the third year. These findings underscore the need for more research to determine whether the association between NSSI and mental illness varies across individuals with different lifetime and 12-month patterns of NSSI frequency. Finally, it is important to examine whether the nature and specificity of these associations differ by sex. To the best of our knowledge, no epidemiological study has evaluated whether the associations between NSSI and mental disorders are comparable in males and females.

The current study

To this end, the objectives of the present report were to (1) provide an updated reference regarding the prevalence of sporadic and repetitive NSSI, (2) evaluate the time-order associations between the onset and persistence of both sporadic and repetitive NSSI and *DSM-5* mental disorders, and (3) explore sex differences, as it is unclear whether the association of NSSI with mental disorders is the same for both sexes. Addressing these questions regarding the specificity, nature, and generalizability of the link between NSSI and mental disorders could provide helpful information for understanding developmental trajectories. Ultimately, this could guide the development of effective preventive and early intervention programs for both NSSI and mental disorders among college students (Moran et al., 2024).

Method

Participants and procedures

Online surveys were carried out in a convenience sample of 77 universities across 18 countries (Australia, Belgium, Canada, Chile, China, France, Germany, Kenya, Mexico, Netherlands, New Zealand,

https://doi.org/10.1017/S0033291725100688 Published online by Cambridge University Press

Northern Ireland, Republic of Ireland, Romania, Saudi Arabia, South Africa, Spain, and Sweden). Although the recruitment method varied by institution (Supplementary Table 1), attempts were generally made to recruit 100% of first-year students via emails provided by participating universities requesting participation in a confidential online survey of student mental health. Participants were provided with a study description, an informed consent script, and a university phone number for questions. Incentives, which differed across countries (e.g., raffles for store credit coupons, movie passes, and cash), were offered in 11 of the 18 countries to encourage survey completion (Supplementary Table 1). Informed consent was required before administering the survey. Reminder emails were used to increase response rates. Most participants (Age: Median = 19, IQR: 18–22 years) were female (57.9%, SE = 0.2). Of the sample, 21.0% identified as non-heterosexual and 45.7% had parents who were college graduates (Supplementary Table 2). Within-country sample sizes ranged from $n = 333$ in Kenya to $n = 11{,}607$ in the Netherlands. Ethics approval details are posted at https://www.hcp.med.harvard.edu/wmh/ftpdir/IRB_EthicsApproval_WMH-ICS_DSM-5.pdf

Measures

The self-report questionnaire (https://www.hcp.med.harvard.edu/wmh/ftpdir/WMH-ICS_Baseline_survey_V3.2_FINAL_20220228.pdf) was developed in English and translated into local languages using a translation, back-translation, and harmonization protocol to maximize cross-national equivalence building on the standard World Health Organization (WHO) protocol (Harkness, Pennell, Villar, Gebler, & Aguilar-Gaxiola, 2008).

Socio-demographics

The socio-demographic variables in the analysis included self-reported age (18–36+ years old), sex assigned at birth (male, female), parent education (assessed by asking respondents to report the highest education level attained by either parent or the people who raised them, and then dichotomizing for analysis into college degree versus less than college degree), gender identity (man, woman, another gender), and sexual orientation (heterosexual/straight, gay/-lesbian, other). As neither gender identity nor sexual orientation was assessed in Saudi Arabia, gender identity was set equal to sex at birth and sexual orientation was set equal to heterosexual in that survey. These sociodemographic variables were entered as covariates in analyses.

Non-suicidal self-injury

Non-suicidal self-injury was assessed with questions from the self-report version of the Self-Injurious Thoughts and Behaviors Interview (SITBI; Nock, Holmberg, Photos, & Michel, 2007). The NSSI section of the SITBI shows adequate psychometric properties, including good construct validity ($\kappa = 0.74$–1.0) and excellent test–retest reliability ($\kappa = 1.0$; Nock et al., 2007). The version used in the current study showed excellent test–retest reliability ($\kappa = 1.0$) and external validity ($\kappa = 1.0$) in a comparison study of self-report questionnaires, including among young adults (Fox et al., 2020; Latimer, Meade, & Tennant, 2013). The online version has also demonstrated excellent test–retest reliability for NSSI ($\kappa = 0.94$; Fox et al., 2020). NSSI was assessed by asking respondents whether they had ever 'done something to purposely hurt themselves, without wanting to die'. If so, respondents were asked how old they were the first time they did this, the number of times in their life they engaged in this type of behavior, and the number of times in the last 12 months they did so.

Sporadic, repetitive, and persistent NSSI. We used participants' responses to the SITBI to create measures of sporadic, repetitive, and persistent NSSI. Lifetime sporadic NSSI was defined as engaging in NSSI one to five times in a participant's lifetime, whereas lifetime repetitive NSSI involved six or more episodes. Conversely, persistent repetitive NSSI was defined using the *DSM-5* requirement of engaging in NSSI five or more times in the past 12 months (APA, 2022). Persistence of sporadic NSSI was defined as engaging in NSSI 1–4 times in the past 12 months. Twelve-month persistence among those reporting any history of NSSI was limited to those with age-of-onset at least 2 years before the time the survey was conducted.

Mental disorders

Lifetime prevalence of DSM-5 generalized anxiety disorder (GAD), major depressive disorder (MDD), and panic disorder (PD) was assessed with the Composite International Diagnostic Interview Screening Scales, Version 3.2 (CIDI-SC; Kessler et al., 2013a). Diagnoses based on CIDI-SC have been shown to have good concordance with diagnoses based on blinded clinical reappraisal interviews (Kessler et al., 2013b; Kessler, Calabrese, et al., 2013a). Lifetime assessments of bipolar I/II disorder (BP) and drug use disorder (DUD) were based on the Composite International Diagnostic Interview for DSM-5 (CIDI-5) modified for self-report administration. Although only one clinical reappraisal study has assessed CIDI-5 so far, concordance of diagnoses with diagnoses based on blinded clinical reappraisal interviews was consistently good (AU-ROC = 0.67–0.75; Khaled et al., 2024).

The other three disorders were assessed with brief specialized dimensional screening scales: post-traumatic stress disorder (PTSD) with the 4-Item Short-Form Short-Form of the PTSD Checklist for DSM-5 (PCL-5; Weathers et al., 2013); attention-deficit/hyperactivity disorder (ADHD) with the Adult Self-Report Scale-V1.1 (ASRS-V1.1) Screener (Kessler et al., 2007a); and alcohol use disorder (AUD) with the Alcohol Use Disorders Identification Test (AUDIT) (Babor et al., 2001).

The PCL-5 is a widely used and validated PTSD screening scale (Georgescu & Nedelcea, 2024; Hansen, Vaegter, Ravn, & Andersen, 2023; Kramer, Whiteman, Petri, Spitzer, & Weathers, 2023). Diagnoses obtained by using a cutpoint of 5+ on the 4-Item Short-Form PCL-5 (each item scored in the range 0–4 for a total score of 0–16) have good concordance with DSM-5 diagnoses in the full PCL-5 (AU-ROC = 0.98; Zuromski et al., 2019). The ASRS-V1.1 Screener is a widely used and validated 6-item screening scale of adult ADHD (each item scored in the range 0–4 for a total score of 0–24; Ziobrowski et al., 2023) that assesses symptoms over a 6-month recall period. Diagnoses obtained by using a cutpoint of 14+ have been shown to have good concordance with blinded clinical diagnoses in multiple clinical reappraisal studies (Kessler et al., 2005; Kessler et al., 2007a). Lastly, the AUDIT, a widely used and validated 10-question screening scale for AUD (each item scored in the range 0–4 for as total score of 0–40), assesses symptoms over a 12-month recall period. We used the standard AUDIT scoring rules for possible dependence (either a score of 16 or more on the 0–40 total AUDIT or a score of 8–15 on the total AUDIT in conjunction with a score of 4+ on the AUDIT dependence subscale), which have had high concordance with blinded clinical diagnoses of AUD in prior research (AU-ROC = 0.91; Toner, Böhnke, Andersen, & McCambridge, 2019). However, as more recent studies suggest that a lower threshold might be preferable for university students, we also included AUDIT scores for likely abuse (8+ on the total AUDIT; Villarosa-Hurlocker et al., 2020).

https://doi.org/10.1017/S0033291725100688 Published online by Cambridge University Press

Lifetime prevalence was assessed for six mental disorders. In these cases, respondents were asked lifetime diagnostic stem questions and then, if affirmative, were asked to focus on the time in their life when the symptoms were most severe. The symptom questions were asked about that worst time, which could differ within respondents across mental disorders. Respondents screening positive for lifetime prevalence were then asked about age-of-onset (AOO) and a single question (i.e. rather than repeating all symptom questions) about 12-month prevalence. ADHD and AUD, in comparison, were assessed only for the past 6 months or 12 months, respectively.

Statistical analysis

A calibration weight was used to adjust for differential within-university response rates by student age and sex at birth. Multiple imputation (MI) by chained equations (Van Buren, 2012) was then used to adjust for within-survey item non-response and random internal subsampling of survey sections. The latter was used as a variation of the split questionnaire design proposed by Raghunathan and Grizzle (1995) to allow for questions of secondary importance to be administered in probability subsamples of surveys and then imputed to full samples using MI methods. We did this by administering diagnostic stem questions for diagnoses of secondary interest to 100% of respondents and then administered full diagnostic sections to a probability subsample of the respondents who endorsed the stems. The diagnoses assessed in this way varied across countries depending on the interests of researchers in the countries. Given the high comorbidities that exist among common mental disorders (McGrath et al., 2020), access to full diagnostic data for most disorders allowed us to generate useful estimates for these screening disorders. The final multiply imputed data set for model estimation included 30 imputations.

Simple mean calculations were used to estimate lifetime prevalence, 12-month prevalence, and 12-month persistence, where the latter was defined as 12-month prevalence in the subset of lifetime cases with AOO at least 2 years prior to the respondent's age at the interview. Survival curves were calculated to estimate AOO distributions. Multivariable Poisson regression models were then used to examine associations between NSSI and lifetime prevalence, 12-month prevalence, and 12-month persistence. Exponentiated Poisson regression coefficients are reported here as risk ratios (RRs) with 95% confidence intervals.

The lifetime models were estimated in a discrete-time person-year survival framework in which year of life was treated as a continuous control variable, the outcome (i.e. first onset of the disorder) was defined dichotomously, and person-years beyond the year of onset were censored (Singer & Willett, 1993). Persistence models were estimated to predict 12-month prevalence among lifetime cases at the person-level, using age-of-onset and time-since-onset (i.e. the number of years since onset as of the time of interview) as separate control variables and limiting the analysis to respondents with age-of-onset at least 2 years people to age at interview. All multivariable models were stratified by university and adjusted for country, year of survey completion, and whether students were surveyed in the first 3 months of the academic year, generating pooled within-country regression coefficients. As ADHD and AUD were only assessed for 6- and 12-month prevalence, respectively, these disorders were excluded from the analysis of 12-month persistence among lifetime cases. Design-based F tests with appropriate degrees of freedom were calculated to determine associations between NSSI and mental disorders.

As observations were weighted to make post-stratification adjustments and were clustered within universities, design-based standard errors of prevalence estimates were obtained using weighted frequency analyses with stratification by university with SAS (V9.4, SAS/STAT V15.3). STATA/MP (V18.0) was then used to estimate the multivariable Poisson models with robust variance estimates to adjust for design effects (Chen, Qian, Shi, & Franklin, 2018). All significance tests were evaluated using .05-level two-sided design-based tests with false discovery rate (FDR) corrections using the Benjamini-Hochberg procedure (Benjamini & Hochberg, 1995). All standard errors, confidence intervals and significance tests were adjusted to account for the variance both between and within imputations.

Results

Prevalence and onset of NSSI

Lifetime prevalence of NSSI was 24.5% (SE = 0.2), with higher prevalence among females (29.3%, SE = 0.2) than males (18.0%, SE = 0.3; RR = 1.54, 95% CI = 1.37–1.72). As depicted in Figure 1, the probability of NSSI onset begins to increase after 10 years, with a steeper curve for females than males. It peaks at age 16 for men and age 15 for women and then declines into emerging adulthood. It should be noted, though, that the median age of the sample was 19 years, which means that the hazard curves for emerging adulthood (18–29 years) should be interpreted cautiously. Among those reporting lifetime NSSI, 44.5% reported sporadic NSSI (1–5 lifetime episodes), whereas 55.5% reported engaging in repetitive NSSI (6+ lifetime episodes). This corresponds to a prevalence of 10.9% (SE = 0.2) for lifetime sporadic NSSI (9.0% males versus 12.2% females, RR = 1.46, 95% CI = 1.39–1.54) and 13.7% (SE = 0.2) for lifetime repetitive NSSI (9.0% males versus 17.1% females, RR = 1.72, 95% CI = 1.63–1.80). Among those with a history of NSSI, females were more likely than males to engage in repetitive NSSI (RR = 1.11, 95% CI = 1.06–1.15). A total of 11.4% (SE = 0.1) reported past year NSSI, and 3.5% (SE = 0.1) met the frequency criterion of *DSM-5* NSSI disorder (i.e. ≥ five episodes in the last year), with a higher prevalence among females (4.4%, SE = 0.1) than males (2.4%, SE = 0.1, RR = 1.54, 95%CI = 1.37–1.72). Females and males with a history of repetitive NSSI were equally likely to meet the *DSM-5* frequency criterion (RR = 0.93, 95%CI = 0.84–1.03).

Comorbidity between NSSI and mental disorders

We examined the cross-sectional associations between lifetime NSSI and lifetime mental disorders among students with and without a history of NSSI (Table 1; Supplementary Tables 3 and 4 present sex-specific associations). Among students reporting sporadic NSSI, 82.5% (SE = 0.5) had at least one comorbid mental disorder, while 92.0% (SE = 0.3) of students reporting repetitive NSSI met criteria for one or more lifetime mental disorders. Approximately one in three students (31.0%) reporting sporadic NSSI, and more than half (54.1%) with a history of repetitive NSSI, reported three or more disorders (Table 1). The most frequently co-occurring mental disorders were PTSD (range 63.8–76.5%) and MDD (range 34.9–50.4%). Conversely, 13.7% (SE = 0.2) and 19.3% (SE = 0.2) of students with any mental disorder reported engaging in sporadic and repetitive NSSI, respectively.

https://doi.org/10.1017/S0033291725100688 Published online by Cambridge University Press

Temporal sequence of age of onset of NSSI and mental disorders

Table 2 summarizes the temporal sequence of age-of-onset for NSSI and mental disorders among students with a history of NSSI. The results show that a mental disorder generally preceded the onset of NSSI (ranging from 58.4% to 60.7% for any mental disorder). MDD and ADHD were significantly more likely to have an onset before NSSI. However, a reverse pattern emerged for PTSD, AUD, and DUD, where both sporadic and repetitive NSSI were significantly more likely to occur before than after the onset of these disorders (Table 2).

Associations between primary mental disorders and subsequent onset and persistence of sporadic and repetitive NSSI

A limitation of the results in Table 2 is that they do not consider differences in the age-at-onset distributions of mental disorders relative to NSSI. Table 3 presents results from multivariable models that do this by examining time-lagged associations between temporally primary mental disorders and the subsequent onset of sporadic and repetitive NSSI (see Supplementary Table 5 for bivariate associations). With the exception of AUD, all mental disorders were consistently associated with the onset of repetitive NSSI (range RRs 1.32–3.77). All disorders, except DUD, were also associated with an increased risk of sporadic NSSI, albeit with weaker associations (range RRs 1.44–2.74). In multivariate time-lagged models, where mental disorders were coded as present when they had an onset in the same year as NSSI, stronger associations were observed for both sporadic (range RRs 2.23–4.70) and repetitive NSSI (range RRs 2.09–6.90, Supplementary Table 6). Subsequently, we examined associations by sex (Table 3) and evaluated sex-specific interaction effects (Supplementary Table 7). This revealed that all associations were similar for females and males.

Next, we investigated the associations between temporally prior mental disorders and the subsequent persistence of sporadic (1–4 past-year episodes) and repetitive (*DSM-5* criterion: 5+ past-year episodes) NSSI (Table 3). While no mental disorder was associated with ongoing sporadic NSSI, all disorders except PTSD, AUD, and DUD were associated with the persistence of repetitive NSSI (range RRs 1.18–1.32). Analysis of sex-specific interactions revealed no

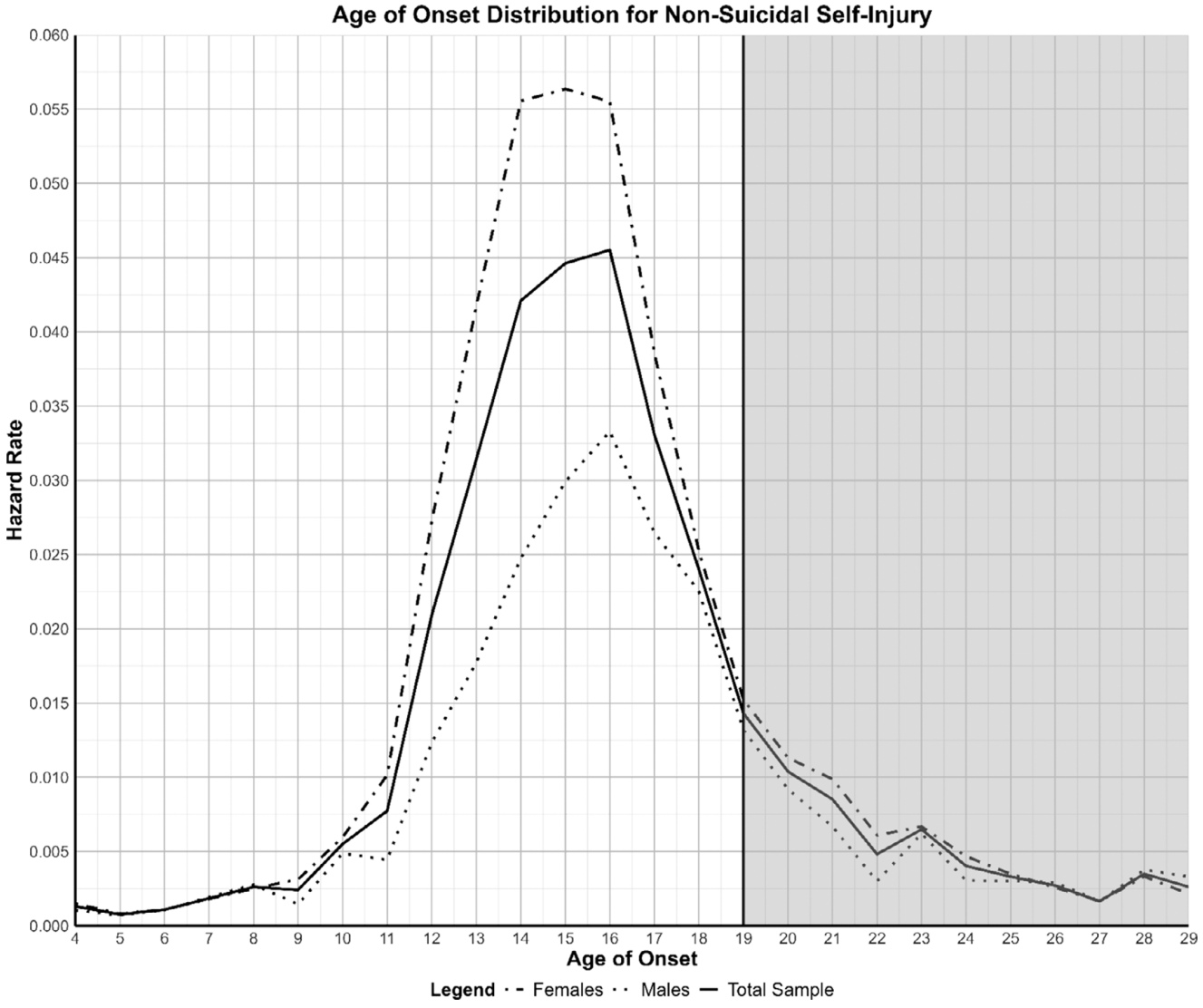

Figure 1. The hazard rate for onset of non-suicidal self-injury across the sample and for males and females separately.
Note: The projected age of onset is based on first-year students, limiting the representativeness of the estimated distributions above age 18–19 years (i.e. the typical age of entering college).

https://doi.org/10.1017/S0033291725100688 Published online by Cambridge University Press

Table 1. Lifetime prevalence of DSM-5 mental disorders among students with and without sporadic and repetitive NSSI across samples from 18 countries (n = 72,288)

	Prevalence		Conditional prevalence lifetime sporadic NSSI (1–5 episodes)				Associations with sporadic NSSI		Conditional prevalence lifetime repetitive NSSI (≥6 episodes)				Associations with repetitive NSSI	
	Entire sample		Disorder among those with NSSI		NSSI among those with disorder				Disorder among those with NSSI		NSSI among those with disorder			
Internalizing disorder	%	(SE)	%	(SE)	%	(SE)	RR	(95%CI)	%	(SE)	%	(SE)	RR	(95%CI)
Major depressive disorder	23.3	(0.2)	34.9	(0.7)	16.3	(0.4)	1.82	(1.75–1.90)*	50.4	(0.6)	29.5	(0.5)	2.33	(2.24–2.41)*
Bipolar spectrum disorder	4.9	(0.1)	7.3	(0.4)	16.0	(0.8)	2.25	(1.99–2.54)*	13.0	(0.4)	36.0	(1.1)	3.83	(3.47–4.24)*
Panic disorder	9.1	(0.1)	12.4	(0.5)	14.9	(0.6)	2.01	(1.83–2.20)*	26.6	(0.5)	40.1	(0.8)	3.66	(3.43–3.91)*
Generalized anxiety disorder	12.8	(0.1)	18.0	(0.5)	15.2	(0.5)	1.97	(1.85–2.10)*	34.2	(0.5)	36.4	(0.6)	3.31	(3.15–3.47)*
Post-traumatic stress disorder	46.5	(0.2)	63.8	(0.6)	14.9	(0.3)	1.55	(1.51–1.59)*	76.5	(0.5)	22.5	(0.3)	1.80	(1.76–1.83)*
Externalizing disorder[a]														
Attention deficit hyperactivity disorder	8.1	(0.1)	11.6	(0.5)	15.5	(0.6)	1.89	(1.71–2.08)*	19.2	(0.6)	32.6	(0.9)	2.89	(2.64–3.17)*
Alcohol use disorder	23.6	(0.2)	27.8	(0.6)	12.8	(0.3)	1.33	(1.27–1.39)*	33.3	(0.6)	19.3	(0.4)	1.54	(1.48–1.60)*
Drug use disorder	9.2	(0.1)	12.9	(0.5)	15.3	(0.6)	2.04	(1.89–2.21)*	20.2	(0.5)	30.1	(0.7)	3.04	(2.86–3.24)*
Any disorder	65.2	(0.2)	82.5	(0.5)	13.7	(0.2)	1.36	(1.34–1.38)*	92.0	(0.3)	19.3	(0.2)	1.46	(1.44–1.48)*
Number of disorders														
Exactly 1	27.4	(0.2)	27.2	(0.6)	10.8	(0.3)	0.92	(0.88–0.97)*	16.4	(0.5)	8.2	(0.3)	0.57	(0.54–0.61)*
Exactly 2	17.5	(0.2)	24.3	(0.6)	15.1	(0.4)	1.47	(1.39–1.55)*	21.5	(0.5)	16.8	(0.4)	1.26	(1.19–1.33)*
Three or more	20.4	(0.2)	31.0	(0.6)	16.5	(0.4)	2.23	(2.13–2.34)*	54.1	(0.6)	36.3	(0.5)	3.47	(3.34–3.60)*

Note: *Significant at the 0.05 level, two-sided test, FDR corrected.
[a]Alcohol use disorder and attention-deficit hyperactivity disorder were assessed only for 12-month prevalence. In calculating the lifetime prevalence of any disorder, we assumed conservatively that the respondents with 12-month ADHD and AUD were the only ones who ever had these disorders in their lifetimes. This means that the estimate of the lifetime prevalence of any disorder and any externalizing disorder is conservative.

significant differences in the strength of these associations between males and females (Supplementary Table 8).

Associations between primary sporadic and repetitive NSSI and subsequent onset and persistence of mental disorders

We also examined the associations of NSSI with subsequent onset of mental disorders (Table 4). In multivariate models, sporadic NSSI was associated with increased odds of onset for six out of eight mental disorders, with risk ratios ranging from 1.26 for MDD to 1.83 for PTSD. Similarly, repetitive NSSI was associated with increased odds of onset for seven out of eight mental disorders, with risk ratios ranging from 1.22 for MDD to 2.27 for DUD. For both sporadic and repetitive NSSI, reduced risk was observed for an onset of ADHD. In multivariate time-lagged models, where NSSI was coded as present when the mental disorder and its predictors (i.e. NSSI and comorbid mental disorders) had an onset in the same year, risk associations were stronger for both sporadic (range RRs 1.62–3.18) and repetitive NSSI (range RRs 1.43–3.79; Supplementary Table 9). Sex-specific interactions with repetitive NSSI revealed highly significant effects (p < .001) for AUD and DUD (Supplementary Table 10), showing stronger associations with the subsequent onset of AUD (RR 1.89 versus 1.48) and DUD (RR 2.77 versus 1.79) among females than males (Table 4). Finally, we investigated whether NSSI was associated with the persistence of mental disorders among students whose disorders began at least 2 years before the survey. This did not appear to be the case for any of the investigated disorders (Table 4).

Discussion

Using data from the WMH-ICS surveys across 72,288 students, we provided updated point estimates of the prevalence of NSSI, its associations with mental disorders, and variations by sex. Three main findings stand out. First, we found that one in four college students reported a history of NSSI, with over half of these students reporting repetitive NSSI (i.e. six or more lifetime episodes). The estimated percentage of students meeting the frequency criterion of *DSM-5* NSSI Disorder (i.e. 5 or more 12-month episodes) was considerably lower (i.e. 3.5%). Second, the time-order lagged associations between the onset of NSSI and mental disorders were bidirectional but were strongest for mental disorders as predictors than outcomes of NSSI (median RR = 1.94 versus 1.58) and for

https://doi.org/10.1017/S0033291725100688 Published online by Cambridge University Press

Table 2. Temporal priorities between onset of sporadic and repetitive NSSI before and after onset of DSM-5 mental disorders (n = 72,288)

	Temporal priority in age of onset between onset disorders and onset sporadic NSSI (1–5 episodes)								
		Disorder first		NSSI first		Same year			
	n	%	(SE)	%	(SE)	%	(SE)	F-test[a]	*P*[b]
Internalizing disorder									
Major depressive disorder	2,919	48.7	(1.2)	31.6	(1.1)	19.7	(0.9)	64.5	<.001
Bipolar spectrum disorder	584	48.4	(2.8)	38.9	(2.6)	12.7	(1.7)	3.5	0.21
Panic disorder	1,067	43.8	(2.1)	41.6	(2.2)	14.5	(1.4)	0.3	1.0
Generalized anxiety disorder	1,523	48.5	(1.6)	34.9	(1.6)	16.5	(1.2)	20.9	<.001
Post-traumatic stress disorder	5,251	40.2	(0.9)	47.5	(1.0)	12.3	(0.7)	15.8	<.001
Externalizing disorder[a]									
Attention deficit hyperactivity disorder	921	97.3	(0.7)	1.3	(0.5)	1.4	(0.5)	101.6	<.001
Alcohol use disorder	2,161	30.7	(1.3)	53.8	(1.4)	15.5	(1.1)	83.5	<.001
Drug use disorder	965	29.3	(2.0)	54.1	(2.1)	16.6	(1.5)	42.1	<.001
Any disorder	6,724	58.4	(0.8)	29.7	(0.9)	11.9	(0.6)	291.1	<.001
Number of disorders									
Exactly 1	2,205	37.8	(1.5)	48.7	(1.7)	13.5	(1.1)	12.6	0.002
Exactly 2	1,976	57.8	(1.5)	28.9	(1.4)	13.3	(1.0)	105.2	<.001
Three or more	2,544	76.9	(1.1)	13.7	(0.9)	9.5	(0.9)	544.4	<.001

	Temporal priority in age of onset between onset disorders and onset repetitive NSSI (≥6 episodes)								
		Disorder first		NSSI first		Same year			
	n	%	(SE)	%	(SE)	%	(SE)	*F*-test[a]	*p*
Internalizing disorder									
Major depressive disorder	5,379	44.9	(0.9)	34.1	(0.9)	21.0	(0.7)	43.6	<.001
Bipolar spectrum disorder	1,375	36.4	(1.8)	49.5	(1.8)	14.0	(1.3)	14.9	<.001
Panic disorder	2,898	36.5	(1.2)	50.4	(1.2)	13.1	(0.8)	35.8	<.001
Generalized anxiety disorder	3,697	44.5	(1.0)	40.0	(1.1)	15.4	(0.7)	5.0	0.084
Post-traumatic stress disorder	8,103	36.0	(1.1)	53.5	(1.1)	10.5	(0.5)	67.8	<.001
Externalizing disorder[a]									
Attention deficit hyperactivity disorder	2,023	93.4	(0.7)	3.2	(0.5)	3.3	(0.5)	484.1	<.001
Alcohol use disorder	3,445	19.9	(1.0)	68.9	(1.0)	11.3	(0.8)	501.2	<.001
Drug use disorder	2,002	19.2	(1.1)	68.8	(1.4)	12.0	(0.9)	357.9	<.001
Any disorder	9,719	60.7	(0.7)	27.4	(0.6)	11.9	(0.5)	610.4	<.001
Number of disorders									
Exactly 1	1,697	30.3	(1.6)	57.2	(1.7)	12.5	(1.1)	66.3	<.001
Exactly 2	2,282	52.0	(1.5)	32.5	(1.3)	15.5	(1.1)	53.7	<.001
Three or more	5,739	73.3	(0.9)	16.4	(0.7)	10.3	(0.6)	1051.4	<.001

[a]*F*-test to evaluate significance of pooled one-degree-of-freedom χ^2 tests across 30 imputed datasets on a reduced subset of respondents comparing percent with onset of a mental disorder before the onset of NSSI versus those with the onset of NSSI occurring after the onset of the mental disorder.
[b]FDR-corrected p-values.

students reporting repetitive than sporadic NSSI (median RR = 1.78 versus 1.47). Third, few sex differences were observed in these associations, with repetitive NSSI being a stronger predictor for substance use disorders among females than males.

In this sample, we observed a lifetime NSSI prevalence of 24.5%, which exceeds previous reports (Kiekens, Hasking, et al., 2023b; Swannell, Martin, Page, Hasking, & John, 2014). Over recent years, studies indicate that NSSI may be increasing (Gillies et al., 2018;

https://doi.org/10.1017/S0033291725100688 Published online by Cambridge University Press

Table 3. Multivariate time-lagged associations between DSM-5 mental disorders and subsequent onset and persistence of sporadic and repetitive NSSI (n = 72,288)

	Onset of NSSI											
	Sporadic (1–5 lifetime episodes)						Repetitive (≥6 lifetime episodes)					
	Entire sample		Males		Females		Entire sample		Males		Females	
	RR	(95%CI)	RR	(95%CI)	RR	(95%CI)	RR	(95%CI)	RR	(95%CI)	RR	(95%CI)
Internalizing disorder												
Major depressive disorder	2.72	(2.43–3.04)*	2.64	(2.09–3.33)*	2.76	(2.43–3.14)*	3.73	(3.33–4.18)*	4.02	(3.15–5.13)*	3.62	(3.22–4.07)*
Bipolar spectrum disorder	2.74	(2.26–3.31)*	2.44	(1.69–3.52)*	2.90	(2.36–3.56)*	3.77	(3.28–4.34)*	3.80	(2.73–5.28)*	3.71	(3.19–4.31)*
Panic disorder	1.49	(1.28–1.74)*	1.41	(0.94–2.11)	1.55	(1.31–1.83)*	1.99	(1.78–2.24)*	2.41	(1.75–3.33)*	1.89	(1.67–2.14)*
Generalized anxiety disorder	1.44	(1.26–1.65)*	1.64	(1.26–2.15)*	1.39	(1.19–1.62)*	1.80	(1.61–2.01)*	2.04	(1.59–2.62)*	1.74	(1.53–1.96)*
Post-traumatic stress disorder	2.16	(1.94–2.41)*	2.29	(1.91–2.75)*	2.10	(1.86–2.38)*	2.14	(1.96–2.33)*	2.45	(2.01–2.97)*	2.03	(1.83–2.24)*
Externalizing disorder												
Attention deficit hyperactivity disorder	1.88	(1.70–2.08)*	1.89	(1.55–2.30)*	1.88	(1.67–2.12)*	2.07	(1.91–2.25)*	2.34	(1.94–2.82)*	1.98	(1.82–2.15)*
Alcohol use disorder	1.44	(1.27–1.62)*	1.54	(1.24–1.91)*	1.34	(1.15–1.55)*	1.08	(0.95–1.23)	1.10	(0.87–1.40)	1.07	(0.93–1.24)
Drug use disorder	1.19	(1.00–1.42)	1.15	(0.87–1.52)	1.15	(0.92–1.43)	1.32	(1.14–1.53)*	1.21	(0.93–1.58)	1.37	(1.14–1.65)*
Number of disorders												
None and exactly 1		-		-		-		-		-		-
Exactly 2	0.77	(0.67–0.88)*	0.76	(0.58–1.00)	0.77	(0.65–0.90)*	0.82	(0.72–0.94)*	0.80	(0.62–1.04)	0.84	(0.73–0.96)*
Three or more	0.37	(0.29–0.48)*	0.38	(0.24–0.61)*	0.37	(0.28–0.49)*	0.40	(0.32–0.51)*	0.33	(0.20–0.56)*	0.44	(0.34–0.56)*
	Onset of NSSI											
	Sporadic (1–4 past-year episodes)						Repetitive (DSM–5 criterion of ≥ 5 past-year episodes)					
	Entire sample		Males		Females		Entire sample		Males		Females	
	RR	(95%CI)	RR	(95%CI)	RR	(95%CI)	RR	(95%CI)	RR	(95%CI)	RR	(95%CI)
Major depressive disorder	1.06	(0.93–1.21)	1.13	(0.88–1.44)	1.03	(0.90–1.18)	1.22	(1.07–1.40)*	1.19	(0.87–1.63)	1.23	(1.07–1.43)*
Bipolar spectrum disorder	1.10	(0.93–1.30)	1.18	(0.84–1.66)	1.07	(0.88–1.30)	1.32	(1.08–1.61)*	1.19	(0.77–1.86)	1.37	(1.10–1.69)*
Panic disorder	1.10	(0.95–1.27)	1.16	(0.82–1.64)	1.08	(0.93–1.27)	1.27	(1.11–1.45)*	1.30	(0.92–1.83)	1.26	(1.08–1.47)*
Generalized anxiety disorder	1.02	(0.89–1.18)	0.89	(0.65–1.22)	1.06	(0.91–1.25)	1.28	(1.11–1.46)*	1.03	(0.75–1.42)	1.36	(1.16–1.59)*
Post-traumatic stress disorder	1.05	(0.95–1.17)	1.06	(0.86–1.32)	1.06	(0.94–1.19)	1.16	(1.01–1.34)	1.13	(0.87–1.48)	1.18	(1.01–1.39)
Externalizing disorder												
Attention deficit hyperactivity disorder	1.03	(0.92–1.15)	0.99	(0.76–1.28)	1.05	(0.93–1.20)	1.18	(1.04–1.32)*	1.09	(0.84–1.41)	1.20	(1.05–1.38)*

(*Continued*)

Table 3. (*Continued*)

	Onset of NSSI											
	Sporadic (1–4 past-year episodes)						Repetitive (DSM–5 criterion of ≥ 5 past-year episodes)					
	Entire sample		Males		Females		Entire sample		Males		Females	
	RR	(95%CI)	RR	(95%CI)	RR	(95%CI)	RR	(95%CI)	RR	(95%CI)	RR	(95%CI)
Alcohol use disorder	1.07	(0.89–1.29)	1.06	(0.76–1.49)	1.08	(0.87–1.33)	1.24	(1.04–1.49)	1.30	(0.92–1.85)	1.21	(1.00–1.48)
Drug use disorder	1.01	(0.82–1.24)	0.81	(0.54–1.21)	1.16	(0.92–1.46)	1.05	(0.86–1.29)	0.94	(0.60–1.47)	1.11	(0.88–1.40)
Number of disorders												
None and exactly 1		-		-	-		-		-		-	
Exactly 2	0.95	(0.81–1.12)	0.98	(0.70–1.37)	0.94	(0.78–1.12)	1.00	(0.84–1.19)	1.06	(0.72–1.56)	0.98	(0.82–1.18)
Three or more	0.93	(0.73–1.19)	1.01	(0.59–1.72)	0.90	(0.68–1.18)	0.97	(0.73–1.30)	1.24	(0.68–2.26)	0.89	(0.65–1.23)

Note: Each column displays the results of a separate lagged multivariate model, either within a person-period survival framework (for onset models) or a person-level time-order framework (for persistence models). The type and number of mental disorders that occurred prior to NSSI are used as multivariate lagged predictors, controlling for the following covariates in onset models [person-year, sex (entire sample), country, parental education, gender modality, non-heterosexuality, survey taken in the first 3 months of school, and year categories] and persistence models [age of onset of NSSI, years since onset of NSSI, sex (entire sample), country, parental education, gender modality, non-heterosexuality, survey taken in the first 3 months of school, and year categories]. *F*-tests evaluating the significance of differences between males and females were all non-significant (Supplementary Tables 7–8).*Significant at the 0.05 level, two-sided test, FDR corrected.

https://doi.org/10.1017/S0033291725100688 Published online by Cambridge University Press

Table 4. Multivariate time-lagged associations between sporadic and repetitive NSSI and subsequent onset and persistence of DSM-5 mental disorders (n = 72,288)

	Predictor sporadic NSSI (1–5 lifetime episodes)						Predictor repetitive NSSI (≥6 lifetime episodes)					
	Entire sample		Males		Females		Entire sample		Males		Females	
Onset of:	RR	(95%CI)	RR	(95%CI)	RR	(95%CI)	RR	(95%CI)	RR	(95%CI)	RR	(95%CI)
Internalizing disorder												
Major depressive disorder	1.26	(1.15–1.38)*	1.16	(0.95–1.42)	1.32	(1.20–1.45)*	1.22	(1.12–1.33)*	1.24	(1.02–1.50)	1.25	(1.15–1.37)*
Bipolar spectrum disorder	1.45	(1.19–1.76)*	1.56	(1.10–2.21)	1.41	(1.11–1.79)*	1.75	(1.47–2.09)*	1.78	(1.27–2.50)*	1.77	(1.45–2.15)*
Panic disorder	1.34	(1.15–1.57)*	1.39	(0.97–1.98)	1.34	(1.13–1.58)*	1.85	(1.67–2.06)*	1.86	(1.44–2.40)*	1.89	(1.68–2.12)*
Generalized anxiety disorder	0.99	(0.88–1.11)	0.87	(0.66–1.13)	1.04	(0.92–1.18)	1.22	(1.12–1.34)*	1.15	(0.94–1.42)	1.27	(1.15–1.40)*
Post-traumatic stress disorder	1.83	(1.72–1.95)*	1.78	(1.55–2.05)*	1.86	(1.75–1.98)*	1.72	(1.63–1.81)*	**1.78**	**(1.60–1.99)***	**1.74**	**(1.63–1.85)***
Externalizing disorder												
Attention deficit hyperactivity disorder	0.31	(0.14–0.67)*	0.51	(0.15–1.72)	0.21	(0.08–0.56)*	0.63	(0.44–0.90)*	0.98	(0.47–2.02)	0.52	(0.35–0.77)*
Alcohol use disorder	1.71	(1.581.86)*	1.66	(1.45–1.90)*	1.77	(1.61–1.95)*	1.75	(1.63–1.87)*	**1.48**	**(1.30–1.69)***	**1.89**	**(1.74–2.05)***
Drug use disorder	1.79	(1.58–2.03)*	1.55	(1.27–1.90)*	2.14	(1.81–2.53)*	2.27	(2.07–2.49)*	**1.79**	**(1.52–2.12)***	**2.77**	**(2.45–3.12)***

	Predictor sporadic NSSI (1–5 lifetime episodes)						Predictor repetitive NSSI (≥6 lifetime episodes)					
	Entire sample		Males		Females		Entire sample		Males		Females	
Onset of:	RR	(95%CI)	RR	(95%CI)	RR	(95%CI)	RR	(95%CI)	RR	(95%CI)	RR	(95%CI)
Internalizing disorder												
Major depressive disorder	0.99	(0.94–1.03)	0.97	(0.87–1.09)	0.99	(0.95–1.04)	0.99	(0.97–1.02)	1.01	(0.94–1.08)	0.99	(0.96–1.02)
Bipolar spectrum disorder	1.02	(0.94–1.10)	1.07	(0.92–1.24)	0.99	(0.90–1.09)	1.01	(0.96–1.06)	1.02	(0.92–1.13)	1.01	(0.95–1.06)
Panic disorder	1.01	(0.93–1.10)	0.96	(0.75–1.25)	1.02	(0.93–1.11)	1.02	(0.91–1.07)	1.04	(0.90–1.19)	1.02	(0.97–1.07)
Generalized anxiety disorder	0.99	(0.94–1.04)	0.97	(0.83–1.12)	0.99	(0.95–1.04)	1.01	(0.95–1.04)	0.99	(0.91–1.08)	1.01	(0.99–1.04)
Post-traumatic stress disorder	1.01	(0.96–1.07)	1.00	(0.89–1.13)	1.01	(0.95–1.07)	1.03	(0.98–1.07)	1.07	(0.99–1.16)	1.02	(0.99–1.06)
Externalizing disorder												
Attention deficit hyperactivity disorder	–	–	–	–	–	–	–	–	–	–	–	–
Alcohol use disorder	–	–	–	–	–	–	–	–	–	–	–	–
Drug use disorder	1.04	(0.94–1.14)	1.08	(0.93–1.24)	1.01	(0.88–1.14)	1.01	(0.94–1.08)	1.08	(0.97–1.21)	0.96	(0.89–1.05)

Note: Each cell presents the result of a separate multivariate model, either within a person-period survival framework (for onset models) or a person-level time-order framework (for persistence models). The onset of sporadic and repetitive NSSI that occurred prior to DSM-5 mental disorders are both used as predictors, controlling for the type and number of comorbid mental disorders, as well as the following covariates in onset models [person-year, sex (entire sample), country, parental education, gender modality, non-heterosexuality, survey taken in the first 3 months of school, and year categories] and persistence models [age of onset mental disorder, years since onset of mental disorder, sex (entire sample), country, parental education, gender modality, non-heterosexuality, survey taken in the first 3 months of school, and year categories]. Significant F-tests ($p < .05$) evaluating the significance of differences between males and females are indicated in bold (Supplementary Table 10).*Significant at the 0.05 level, two-sided test, FDR corrected.

Wester, Trepal, & King, 2018). As we found that more than half of students with an onset of NSSI report lifetime repetitive NSSI, this confirms that NSSI is a prevalent behavior among college students. Furthermore, 3.5% of students met the *DSM-5* frequency criterion of at least five NSSI episodes in the past year, which is higher than previously reported rates (e.g. 2.3%; Kiekens, Hasking, et al., 2023b). In line with earlier work (Bresin & Schoenleber, 2015; Kiekens et al., 2018), we found elevated rates of lifetime NSSI and the past-year *DSM-5* frequency criterion among females. However, male students who engaged in repetitive NSSI were equally likely to meet the *DSM-5* frequency criterion. This suggests that while females may be more likely to have a history of NSSI, males with a repetitive history are equally likely to persist in NSSI during their student years (Wilkinson et al., 2022).

A novel finding is that associations with mental disorders were strongest for students reporting repetitive NSSI. Internalizing disorders consistently predicted the onset of both sporadic and repetitive NSSI, aligning with prior research (Bentley et al., 2015; Fox et al., 2015; Kiekens et al., 2019). Furthermore, we identified ADHD as an early risk factor for the onset of NSSI independent of other mental disorders (Ojala et al., 2022). In contrast, substance use disorders were only weakly associated with the onset of NSSI. This may be because NSSI typically emerges prior to any substance use problems and signals an increased risk for other impulsive coping behaviors. Indeed, we found evidence that NSSI predicted future AUD and DUD, which suggests that some emerging adults may transition from NSSI to alcohol and drugs for emotion-regulation purposes (Steinhoff, Cavelti, Koenig, Reichl, & Kaess, 2024; Stellern et al., 2023). While associations were strongest for students engaging in NSSI repetitively, we still found evidence that sporadic NSSI may be a significant signal for early preventive intervention for mental disorders. These findings provide evidence of a reciprocal relationship between the onset of NSSI and mental disorders. As an emotion-regulatory strategy (Taylor et al., 2018), NSSI may be used to manage early symptoms of mental disorders, with the persistence of this behavior – particularly in its repetitive form – elevating the risk for the development of additional psychopathology. Conversely, while most mental disorders predicted which students with a history of NSSI met the *DSM-5* past-year frequency criteria, they were not associated with the persistence of sporadic NSSI (Kiekens, Claes, et al., 2023a).

Finally, we explored sex differences, finding that the time–order relationships were consistent across both sexes. However, females with an onset of repetitive NSSI were more likely to develop AUD and DUD after NSSI than males. Given that males are more likely to develop substance use problems than females (Benjet et al., 2022; Skidmore, Kaufman, & Crowell, 2016), NSSI likely increases risk of switching to other regulatory or impulsive behaviors more strongly among females (Steinhoff et al., 2024). Notably, neither sporadic nor repetitive NSSI predicted the persistence of disorders among students whose onsets occurred at least 2 years before the survey, a pattern observed in both sexes. This indicates that NSSI may function more as a behavioral marker for the onset of later mental disorders rather than for persistent longer-term psychopathology. Future developmental cohort studies are needed to confirm this finding and examine the replicability of the sex-specific interactions.

Limitations and suggestions for future research

This study has several important limitations to consider when interpreting the results. First, age-of-onset assessments were based on retrospective self-reports, which may introduce recall bias. Second, we used screening scales to assess NSSI and mental disorders. Although these scales show good concordance with reappraisal interviews (Kessler, Calabrese, et al., 2013a; Kessler, Santiago, et al., 2013b; Kessler & Ustun, 2004), rates of NSSI have been shown to vary based on assessment methods (e.g. single item, checklist, interview; Aspeqvist, Andersson, Korhonen, Dahlström, & Zetterqvist, 2024; Robinson & Wilson, 2020). Third, given the lack of well-validated self-report measures that assess the number of days on which NSSI occurred (as defined in the DSM-5-TR criteria), we assessed the number of NSSI episodes over the past 12 months. Although episode frequency may provide a more meaningful index of severity (Selby, Kranzler, Fehling, & Panza, 2015), the proportion of students classified as having repetitive 12-month NSSI (i.e. five or more episodes) may include individuals who self-injured multiple times on the same day and thus would not meet the formal diagnostic threshold of five or more days. This discrepancy highlights a measurement limitation and suggests that estimates of DSM-5-TR NSSI disorder based on episode counts might be overestimated. Fourth, we assessed sex differences, not gender differences. People of other genders, and particularly trans students are more likely to self-injure than cisgender students (Hird, Boyes, Strauss, & Hasking, 2024), and warrant attention in future research. Finally, while we established multivariate risk associations based on AOO reports, the current design does not permit causal inferences – specifically, whether engagement in NSSI or meeting diagnostic criteria is the causal attributor of the heightened risk we observed for subsequent psychopathology or NSSI onset.

Relatedly, although we focused on the time–order associations between NSSI and mental disorders throughout the lifespan of emerging adults, they often had an onset in the same year. Future cohort studies would benefit from incorporating ecological momentary assessment (EMA) burst designs – particularly around key developmental transitions (e.g. mid-to-late adolescence, entry into university). Such multi-timeframe designs allow the identification of micro-level affective, cognitive, and interpersonal processes that precede or follow NSSI and the onset or escalation of clinical symptoms (Kiekens, Robinson, Tatnell, & Kirtley, 2021; Cho, Pasquini, & Scot, 2019). When embedded within cohort studies, these designs offer a powerful approach to capturing mechanisms of action that might explain epidemiological risk associations across months and years, such as enhanced stigma, interpersonal conflicts, and emotion dysregulation (Burke, Hamilton, Abramson, & Alloy, 2015; Robinson et al., 2018; Staniland, Hasking, Boyes, & Lewis, 2021). This approach can enhance our understanding of how the NSSI-mental illness association may unfold in the everyday lives of students.

Conclusion

Our findings demonstrate that the relationship between mental disorders and NSSI is bidirectional, not confined to specific disorders, stronger among students reporting repetitive NSSI, and evident for both males and females. Future developmental cohort studies with EMA burst designs are needed to uncover the mechanisms driving these associations and to identify proximal targets for early intervention in both NSSI and mental disorders.

Supplementary material. The supplementary material for this article can be found at http://doi.org/10.1017/S0033291725100688.

https://doi.org/10.1017/S0033291725100688 Published online by Cambridge University Press

Funding statement. Funding to support this initiative was received from the National Institute of Mental Health (NIMH) R56MH109566 (RPA), and the content is solely the responsibility of the authors and does not necessarily represent the official views of the National Institutes of Health or NIMH.

Local funding for surveys in each country is listed below:

Australia: PH has received funding for this work from Suicide Prevention Australia, the Feilman Foundation, and the National Health and Medical Research Council (ID 2032058).

Belgium: The Belgian Fund for Scientific Research (11N0514N/11N0516N/1114717 N), the King Baudouin Foundation (2014-J2140150–102905) (RB), the Ministry of Education, Flanders - Grant# EDC-E3738, institutional payment, awarded to RB.

Canada: Health Canada - Substance Use and Addictions Program. Grant for the Mental Health Systems and Services Laboratory at the University of British Columbia.

Chile: VM, JG, ÁIL, and DN received funding from ANID/Millennium Science Initiative Program-NCS2021_081 and ANID/FONDECYT 1221230.

SM-G received funding from ANID/Millennium Science Initiative Program-NCS2021_081 and ANID/PFCHA/DOCTORADO EN EL EXTRANJERO BECAS CHILE/2019–72200092.

France: Institut Universitaire de France.

Germany: BARMER, a health care insurance company, for project StudiCare.

Hong Kong: Shandong Taishan Scholar Young Expert Project (tsqn201909145.

Mexico: Consejo Nacional de Ciencia y Tecnología (Mexican National Council of Science and Technology). Grant CONACYT 285548 awarded to institution (National Institute of Psychiatry Ramon de la Fuente Muñiz) with CB as PI.

The Netherlands: ZonMw (Netherlands Organisation for Health Research and Development; grant number 636110005) and the PFGV (PFGV; Protestants Fonds voor de Geestelijke Volksgezondheid) in support of the student survey project.

New Zealand: The WMH-ICS NZ surveys were supported by a Rutherford Discovery Fellowship awarded to Associate Professor Damian Scarf, with additional support from the James Hume Bequest Fund and a research grant from University of Otago.

Northern Ireland: The Student Psychological Intervention Trial (SPIT) was supported by Clinical Healthcare Intervention Trials in Ireland Network (CHITIN). CHITIN has received €10.6 million funding from the European Union's INTERREG VA programme managed by the Special EU Programmes Body (SEUPB) with match funding from the Departments of Health in NI and ROI (CHI/5433/18).

Romania:This work was supported by Romanian National Authority for Scientific Research, CNCS—UEFISCDI, Grant number PN-III-P2–2.1-PED-2021-3882, awarded to OD.

Saudi Arabia: The Saudi University Mental Health Survey is conducted by the King Salman Center for Disability Research; funded by Saudi Basic Industries Corporation, King Abdulaziz City for Science and Technology, Ministry of Health (Saudi Arabia) and King Saud University. Funding in-kind was provided by King Faisal Specialist Hospital & Research Center, and Ministry of Economy & Planning, General Authority for Statistics, Riyadh.

South Africa: The work reported herein was made possible through funding by the South African Medical Research Council (SAMRC) through its Division of Research Capacity Development under the MCSP (awarded to JB and XH).

Spain: The PROMES-U study, is supported by Instituto de Salud Carlos III (ISCIII) and cofunded by the European Union, grant number PI20/00006; the Departament de Recerca i Universitats of the Generalitat de Catalunya (AGAUR 2021 SGR 00624); and CIBER -Consorcio Centro de Investigación Biomédica en Red- (CB06/02/0046), Instituto de Salud Carlos III, Ministerio de Ciencia e Innovación and Unión Europea. For surveys directed by Parc Sanitari Sant Joan de Déu, funding was provided by Fundació Sant Joan de Déu.

Sweden: CA, MB and AHB received funding for this work from the Swedish Research Council (ID 2019–01127) as well as from a Public Health Agency in Sweden (ID 04252–2021-2.3.2). Both grants were awarded to AHB.

The World Mental Health International College Student (WMH-ICS) initiative is carried out as part of the World Mental Health (WMH) Survey Initiative. The WMH survey is supported by the National Institute of Mental Health NIMH R01MH070884, the John D. and Catherine T. MacArthur Foundation, the Pfizer Foundation, the US Public Health Service (R13-MH066849, R01-MH069864, and R01 DA016558), the Fogarty International Center (FIRCA R03-TW006481), the Pan American Health Organization, Eli Lilly and Company, Ortho-McNeil Pharmaceutical, GlaxoSmithKline, and Bristol-Myers Squibb (RCK).

None of the funders had any role in the design, analysis, interpretation of results, decision to publish, or preparation of this paper.

A complete list of all within-country and cross-national WMH-ICS publications can be found at http://www.hcp.med.harvard.edu/wmh/college_student_survey.php

Competing interests. RB reports grant funding from Eli Lilly (IIT-H6U-BX-I002). DDE has served as a consultant to/on the scientific advisory boards of Sanofi, Novartis, Minddistrict, Lantern, Schoen Kliniken, Ideamed, and German health insurance companies (BARMER, Techniker Krankenkasse) and a number of federal chambers for psychotherapy. He is also shareholder of 'GET.ON Institut für Online Gesundheitstrainings GmbH für Gesundheitstrainings online GmbH' (HelloBetter), which aims to implement scientific findings related to digital health interventions into routine care. XH has received grants from Sexual Violence Research Institute, Volkswagen Foundation, Wellspring Philanthropies, Foreign, Commonwealth and Development Office (UK government), PANDA Holding Limited, National Research Foundation of South Africa, Center for Inclusive Policy. XH reports consulting fees from Mastercard Foundation, Missing Billion Initiative, UNICEF, International Food Policy Research Institute and the African Union. Hunt has received funding support to attend conferences from Mastercard Foundation and Charité University (Germany). MMH reports consulting fees from Child Mind Institute, New York.

In the past 3 years, Dr. Kessler was a consultant for Cambridge Health Alliance, Canandaigua VA Medical Center, Child Mind Institute, Holmusk, Massachusetts General Hospital, Partners Healthcare, Inc., RallyPoint Networks, Inc., Sage Therapeutics and University of North Carolina. He has stock options in Cerebral Inc., Mirah, PYM (Prepare Your Mind), Roga Sciences and Verisense Health. GK had received funding from the Research Foundation Flanders (12ZZM21N/1204924 N). MKN receives publication royalties from Macmillan, Pearson, and UpToDate. He has been a paid consultant in the past 3 years for Cambridge Health Alliance, and for legal cases regarding a death by suicide. He has stock options in Cerebral Inc. He is an unpaid scientific advisor for Empatica, Koko, and TalkLife. DJS reports personal fees from Discovery Vitality, Johnson & Johnson, Kanna, L'Oreal, Lundbeck, Orion, Sanofi, Servier, Takeda, and Vistagen. DVV reports grant support from Health Canada, Canadian Institutes for Health Research, Provincial Health Services Authority and an internal research grant from the University of British Columbia. He received payments from the Canadian Ministry of Health and the Department of Interior Health for projects related to mental health service provision.

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

[1]School of Population Health, Faculty of Health Sciences, Curtin University, Perth, Australia; [2]Faculty of Psychology and Educational Sciences, KU Leuven, Leuven, Belgium; [3]Center for Contextual Psychiatry, KU Leuven, Leuven, Belgium; [4]Department of Medical and Clinical Psychology, Tilburg University, Tilburg, the Netherlands; [5]Department of Health Care Policy, Harvard Medical School, Boston, MA, USA; [6]Center for Global Mental Health Research, Instituto Nacional de Psiquiatría Ramón de la Fuente Muñiz, Mexico City, Mexico; [7]Department of Psychiatry, College of Medicine, King Saud University, Riyadh, Saudi Arabia; [8]Hospital del Mar Research Institute (IMIM), Barcelona, Spain; [9]Department of Medicine and Life Sciences, Pompeu Fabra University (UPF), Barcelona, Spain; [10]Centro de Investigación Biomédica en Red de Epidemiología y Salud Pública (CIBERESP), Instituto de Salud Carlos III, Madrid, Spain; [11]Biostatistics, Epidemiology and Scientific Computing Department, King Faisal Specialist Hospital and Research Centre, Riyadh, Saudi Arabia; [12]Department of Criminology, Malmö University, Malmö, Sweden; [13]Brain and Mind Institute and

Medical College of East Africa, the Aga Khan University, Nairobi, Kenya; [14]Department of Psychology & Counselling, Daystar University, Nairobi, Kenya; [15]Coordinación de Desarrollo Académico y Servicios Educativos, Universidad la Salle Ciudad Victoria, Ciudad Victoria, Mexico; [16]Mental Health, Alcohol, Substance Use and Tobacco (MAST) Research Unit, South African Medical Research Council, Cape Town, South Africa; [17]Department of Psychiatry and Mental Health, University of Cape Town, South Africa; [18]Department of Clinical Psychology and Psychotherapy, Ulm University, Ulm, Germany; [19]Department of Health, Medicine and Caring Sciences, Linköping University, Linkoping, Sweden; [20]Department of Psychology, Uppsala University, Uppsala, Sweden; [21]Center for Public Health Psychiatry, Katholieke Universiteit Leuven (KUL), Leuven, Belgium; [22]Universitair Psychiatrisch Centrum KU Leuven (UPC-KUL), Leuven, Belgium; [23]Unit of Medicine, Faculty of Health Sciences, and FISABIO, Universitat Jaume I (UJI), Castelló de la Plana, Spain; [24]The Hong Kong University of Science and Technology, Hong Kong SAR, PR China; [25]Career Counseling and Guidance Center, Technical University of Cluj-Napoca, Cluj-Napoca, Romania; [26]Coordinación de Investigación, Universidad la Salle Noroeste, Ciudad Obregón, Mexico; [27]Parc Sanitari Sant Joan de Déu, IRSJD, Sant Boi Llobregat, Spain; [28]Faculty of Behavioural and Movement Science, Department of Clinical, Neuro- and Developmental Psychology, Vrije Universiteit Amsterdam, Amsterdam, The Netherlands; [29]DATA Lab, International Institute for Advanced Studies in Psychotherapy and Applied Mental Health, Babeș-Bolyai University, Cluj-Napoca, Romania; [30]Department of Clinical Psychology and Psychotherapy, Babeș-Bolyai University, Cluj-Napoca, Romania; [31]JC School of Public Health and Primary Care, Faculty of Medicine, The Chinese University of Hong Kong, Hong Kong SAR, PR China; [32]School of Medicine and Health, Technical University of Munich, Munich, Germany; [33]Millennium Nucleus to Improve the Mental Health of Adolescents and Youths (Imhay), Santiago, Chile; [34]Centro de Investigación en Salud Mental Estudiantil (ISME), Facultad de Ciencias Sociales, Universidad de los Andes, Santiago, Chile; [35]Departamento de Medicina, Universitat Internacional de Catalunya (UIC), Barcelona, Spain; [36]Universidad De La Salle Bajío, León, Mexico; [37]Centro de Investigación Biomédica en Red de Salud Mental (CIBERSAM), Madrid, Spain; [38]Africa Health Research Institute (AHRI), Durban, South Africa; [39]Faculty of Psychology and Neuroscience, Maastricht University, Maastricht, The Netherlands; [40]Bordeaux Population Health Research Center, University of Bordeaux, Bordeaux, France; [41]Department of Alcohol and Drug Abuse Rehabilitation Services, Moi Teaching and Referral Hospital, Eldoret, Kenya; [42]Facultad de Ciencias Administrativas y Sociales, Universidad Autónoma de Baja California, Tijuana, Mexico; [43]Faculty of Applied Health Sciences, Deggendorf Institute of Technology, Deggendorf, Germany; [44]Department of Education and Innovation, Inholland University of Applied Sciences, Haarlem, The Netherlands; [45]Facultad de Psicología y Humanidades, Universidad San Sebastián, Valdivia, Chile; [46]Institut de Recerca Sant Joan de Deu, Sant Boi de Llobregat, Spain; [47]School of Public Health, Jining Medical University, Jining, PR China.; [48]SAMRC Unit on Risk and Resilience in Mental Disorders, Department of Psychiatry, Stellenbosch University, Stellenbosch, South Africa; [49]Department of Health Service & Population Research, Institute of Psychiatry, Psychology and Neuroscience, King's College London, London, UK; [50]CEMERA, Facultad de Medicina, Universidad de Chile, Santiago, Chile; [51]Department of Psychological Medicine, University of Otago, Dunedin, New Zealand; [52]Personalised Medicine Centre, School of Medicine, Ulster University, Derry/Londonderry, UK; [53]Atlantic Technological University, Donegal, Ireland; [54]Department of Psychiatry, Faculty of Medicine, University of British Columbia, Vancouver, BC, Canada; [55]Department of Psychiatry, School of Medicine, University of Nairobi, Nairobi, Kenya; [56]Department of Psychology and Cognitive Sciences, University of Bucharest, Bucharest, Romania; [57]Centro de Investigación en Ciencias Cognitivas, Facultad de Psicología, Universidad de Talca, Talca, Chile; [58]School of Psychology, Ulster University, Coleraine, UK; [59]Department of Health Psychology, Universidad Miguel Hernandez de Elche (UMH), Alacant, Spain; [60]Department of Human Sciences, 'Iuliu Hatieganu' University of Medicine and Pharmacy, Cluj-Napoca, Romania; [61]School of Psychology, Massey University, Wellington, New Zealand; [62]Institut Universitari d'Investigació en Ciències de la Salut (IUNICS-IDISBA) and Department of Medicine, University of Balearic Islands (UIB), Palma de Mallorca, Spain; [63]Department of Psychology and Sociology, Universidad de Zaragoza (UNIZAR), Zaragoza, Spain; [64]Department of Clinical Psychology, Utrecht University, Utrecht, Netherlands; [65]Department of Psychology, University of Otago, Dunedin, New Zealand; [66]Department of Psychology, Lingnan University, Hong Kong, Hong SAR; [67]SA MRC Unit on Risk & Resilience in Mental Disorders, University of Cape Town and Neuroscience Institute, Cape Town, South Africa; [68]Facultad de Psicología, Universidad Autónoma de Coahuila, Saltillo, Mexico; [69]Student Health Service, University of Amsterdam, Amsterdam, The Netherlands; [70]School of Population and Public Health, Faculty of Medicine, University of British Columbia, Vancouver, BC, Canada; [71]Department of Psychology, Harvard University, Cambridge, MA, USA

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https://doi.org/10.1017/S0033291725100688 Published online by Cambridge University Press