



Childhood adversities and their associations with mental disorders in the World Mental Health International College Student surveys initiative

Mathilde M. Husky^a, Sue Lee^b, Nancy A. Sampson^b, Shelby Borowski^{b, ID}, Yesica Albor^{c, ID}, Ahmad N. Alhadi^{d, e, ID}, Jordi Alonso^{f, g, h, ID}, Nouf K. Al-Saudⁱ, Yasmin A. Altwaijriⁱ, Claes Andersson^{j, ID}, Lukoye Atwoli^{k, l, m, ID}, Caroline Ayuya Muaka^{n, ID}, Patricia M. Báez-Mansur^o, Laura Ballester^{f, h, ID}, Jason Bantjes^{p, q}, Harald Baumeister^{r, ID}, Marcus Bendtsen^s, Corina Benjet^{c, ID}, Anne H. Berman^{t, ID}, Ronny Bruffaerts^{u, v}, Paula Carrasco^{h, w, ID}, Silver C.N. Chan^x, Irina F. Cohut^y, María Anabell Covarrubias Díaz Couder^z, Paula Cristóbal-Narváez^{aa}, Marcelo A. Crockett^{ab, ID}, Pim Cuijpers^{ac, ad, ID}, Oana A. David^{ad, ae}, Dong Dong^{af, ID}, David D. Ebert^{ag}, Carlos G. Forero^{ah}, Jorge Gaete^{ab, ai, ID}, Margalida Gili^{aj}, Raúl Gutiérrez-García^{ak}, Josep Maria Haro^{aa}, Penelope Hasking^{al, am, ID}, Xanthe Hunt^{p, an}, Florence Jaguga^{ao}, Leontien Jansen^{u, v, ID}, Álvaro I. Langer^{ab, ap}, Irene Léniz^{aq, ID}, Yan Liu^{ar, ID}, Christine Lochner^{as, ID}, Scarlett MacGinty^{ab, at}, Vania Martínez^{ab, au, ID}, Andre Mason^{av}, Muthoni Mathai^{aw, ID}, Margaret McLafferty^{ax, ay, ID}, Elaine K. Murray^{ax}, Catherine M. Musyoka^{aw}, Cătălin Nedelcea^{az}, Daniel Núñez^{ab, ba}, Siobhan M. O'Neill^{bb}, José A. Piqueras^{bc, ID}, Codruta A. Popescu^{bd, ID}, Charlene Rapsey^{be}, Kealagh Robinson^{bf, ID}, Tiscar Rodriguez-Jimenez^{bg, ID}, Wylene Saal^{bh}, Damian Scarf^{1, bi, ID}, Oi-ling Siu^{bj}, Dan J. Stein^{bk, ID}, Sascha Y. Struijs^{ac}, Cristina T. Tomoiaga^{ad}, Karla Patricia Valdés-García^{bl, ID}, Eunice Vargas-Contreras^{bm, ID}, Shelby Verecke^{bn}, Daniel V. Vigo^{bn, bo}, Angel Y. Wang^{bn, ID}, Samuel Y.S. Wong^{af}, Ronald C. Kessler^{b, *, ID}, World Mental Health International College Student collaborators²

^a Active Team, Bordeaux Population Health Research Center, INSERM U1219, University of Bordeaux, France

^b Department of Health Care Policy, Harvard Medical School, Boston, MA, USA

^c Center for Global Mental Health Research, Instituto Nacional de Psiquiatría Ramón de la Fuente Muñiz, Mexico City, Mexico

^d Department of Psychiatry, College of Medicine, King Saud University, Riyadh, Saudi Arabia

^e SABIC Psychological Health Research & Applications Chair (SPHRAC), Department of Psychiatry, College of Medicine, King Saud University, Riyadh, Saudi Arabia

^f Health Services Research Group, Hospital del Mar Research Institute, Barcelona, Spain

^g Department of Medicine and Life Sciences, Pompeu Fabra University (UPF), Barcelona, Spain

^h Centro de Investigación Biomédica en Red de Epidemiología y Salud Pública, Instituto de Salud Carlos III (CIBERESP, ISCIII), Madrid, Spain

ⁱ Biostatistics, Epidemiology and Scientific Computing Department, King Faisal Specialist Hospital and Research Centre, Riyadh, Saudi Arabia

^j Department of Criminology, Malmö University, Malmö, Sweden

^k Department of Medicine, Medical College East Africa, the Aga Khan University, Nairobi, Kenya

^l Brain and Mind Institute, the Aga Khan University, Nairobi, Kenya

^m Department of Mental Health and Behavioural Sciences, Moi University School of Medicine, Eldoret, Kenya

ⁿ Department of Psychology & Counselling, Daystar University, Nairobi, Kenya

^o Coordinación de Desarrollo Académico y Servicios Educativos, Universidad la Salle Ciudad Victoria, Ciudad Victoria, Mexico

^p Mental Health, Alcohol, Substance Use and Tobacco Research Unit, South African Medical Research Council, Cape Town, South Africa

^q Department of Psychiatry and Mental Health, University of Cape Town, Cape Town, South Africa

* Corresponding author.

E-mail address: kessler@hcp.med.harvard.edu (R.C. Kessler).

- ^r Department of Clinical Psychology and Psychotherapy, Ulm University, Ulm, Germany
- ^s Department of Health, Medicine and Caring Sciences, Linköping University, Linköping, Sweden
- ^t Department of Psychology, Uppsala University, Uppsala, Sweden
- ^u Center for Public Health Psychiatry, Department of Neurosciences, Katholieke Universiteit Leuven (KUL), Leuven, Belgium
- ^v Universitair Psychiatrisch Centrum KU Leuven (UPC-KUL), Leuven, Belgium
- ^w Unit of Medicine, Faculty of Health Sciences, and FISABIO, Universitat Jaume I (UJI), Castellon de la Plana, Spain
- ^x The Hong Kong University of Science and Technology, Hong Kong SAR, China
- ^y Career Counseling and Guidance Center, Technical University of Cluj-Napoca, Romania
- ^z Coordinación de Investigación, Universidad la Salle Noroeste, Ciudad Obregón, Mexico
- ^{aa} Parc Sanitari Sant Joan de Deu, Institut de Recerca Sant Joan de Deu (IRSJD), Sant Boi de Llobregat Barcelona, Spain
- ^{ab} Millennium Nucleus to Improve the Mental Health of Adolescents and Youths (Imhay), Santiago, Chile
- ^{ac} Faculty of Behavioural and Movement Science, Department of Clinical, Neuro- and Developmental Psychology, Vrije Universiteit Amsterdam, Amsterdam, The Netherlands
- ^{ad} DATA Lab, International Institute for Advanced Studies in Psychotherapy and Applied Mental Health, Babeş-Bolyai University, Cluj-Napoca, Romania
- ^{ae} Department of Clinical Psychology and Psychotherapy, Babeş-Bolyai University, Cluj-Napoca, Romania
- ^{af} Jockey Club School of Public Health and Primary Care, The Chinese University of Hong Kong, Hong Kong SAR, China
- ^{ag} Department for Sport and Health Sciences, School of Medicine and Health, Technical University Munich, Munich, Germany
- ^{ah} Departamento de Medicina, Universitat Internacional de Catalunya (UIC), Barcelona, Spain
- ^{ai} Centro de Investigación en Salud Mental Estudiantil (ISME), Facultad de Ciencias Sociales, Universidad de los Andes, Santiago, Chile
- ^{aj} Department of Psychology, University of the Balearic Islands (UIB), Palma Mallorca, Spain
- ^{ak} Universidad De La Salle Bajío, Campus Salamanca, Mexico
- ^{al} Curtin enAble Institute, Curtin University, Perth, Australia
- ^{am} Faculty of Health Sciences, School of Population Health, Curtin University, Perth, Australia
- ^{an} Africa Health Research Institute (AHRI), Somkhele, South Africa
- ^{ao} Department of Alcohol and Drug Abuse Rehabilitation Services, Moi Teaching and Referral Hospital, Eldoret, Kenya
- ^{ap} Facultad de Psicología y Humanidades, Universidad San Sebastián, Valdivia, Chile
- ^{aq} Dirección de Salud Mental, Universidad de O'Higgins, Rancagua, Chile
- ^{ar} School of Public Health, Jining Medical University, Jining 272067, Shandong Province, PR China
- ^{as} SAMRC Unit on Risk and Resilience in Mental Disorders, Department of Psychiatry, Stellenbosch University, Stellenbosch, South Africa
- ^{at} Department of Health Service & Population Research, Psychology and Neuroscience, Institute of Psychiatry, King's College London, London, UK
- ^{au} Centro de Medicina Reproductiva y Desarrollo Integral del Adolescente (Cemera), Facultad de Medicina, Universidad de Chile, Santiago, Chile
- ^{av} School of Psychological and Social Sciences, University of Waikato, New Zealand
- ^{aw} Department of Psychiatry, Faculty of Health Sciences, University of Nairobi, Kenya
- ^{ax} Personalised Medicine Centre, School of Medicine, Ulster University, Derry, Londonderry, UK
- ^{ay} Atlantic Technological University, Donegal, Ireland
- ^{az} Department of Psychology and Cognitive Sciences, University of Bucharest, Bucharest, Romania
- ^{ba} Facultad de Psicología, Universidad de Talca, Talca, Chile
- ^{bb} School of Psychology, Ulster University, Coleraine, UK
- ^{bc} Department of Health Psychology, Universidad Miguel Hernandez de Elche (UMH), Alacant, Spain
- ^{bd} Department of Human Sciences, 'Iuliu Hatieganu' University of Medicine and Pharmacy, Cluj-Napoca, Romania
- ^{be} Department of Psychological Medicine, University of Otago, Dunedin, New Zealand
- ^{bf} School of Psychology, Massey University, Wellington, New Zealand
- ^{bg} Department of Psychology and Sociology, Universidad de Zaragoza (UNIZAR), Zaragoza, Spain
- ^{bh} Social Sciences Department, Sol Plaatje University, Kimberley, South Africa
- ^{bi} Department of Psychology, University of Otago, Dunedin, New Zealand
- ^{bj} Department of Psychology, Lingnan University, Hong Kong, Hong SAR, China
- ^{bk} SAMRC Unit on Risk & Resilience in Mental Disorders, Dept of Psychiatry & Neuroscience Institute, University of Cape Town, Cape Town, South Africa
- ^{bl} Facultad de Psicología, Universidad Autónoma de Coahuila, Saltillo, Mexico
- ^{bm} Administrative and Social Sciences Faculty, Autonomous University of Baja California, Ensenada, Mexico
- ^{bn} Department of Psychiatry, Faculty of Medicine, University of British Columbia, Vancouver, BC, Canada
- ^{bo} School of Population and Public Health, Faculty of Medicine, University of British Columbia, Vancouver, BC, Canada

ARTICLE INFO

Keywords:

Childhood adversities
University students
ADHD
Anxiety
Depression
Substance use disorder
Mental disorders
Persistence

ABSTRACT

Purpose: This study investigates associations of childhood adversities (CAs) with lifetime prevalence, 12-month prevalence, and 12-month persistence of mental disorders in a large cross-national sample of university students. **Methods:** Data came from epidemiologic surveys carried out by the World Mental Health International College Student (WMH-ICS) Initiative across 18 countries (n=60,719). The web-based surveys screened for lifetime and 12-month prevalence and age-of-onset of common DSM-5 disorders (Major Depressive Disorder, Bipolar I/II Disorder, Generalized Anxiety Disorder, Panic Disorder, Posttraumatic Stress Disorder, Alcohol and Drug Use disorders, Attention-Deficit/Hyperactivity Disorder) and five types of CAs (family dysfunction, emotional abuse, physical abuse, sexual abuse, neglect). Multivariable Poisson regression models estimated associations of CA type, number, and frequency with disorders. **Results:** The majority of incoming students reported exposure to at least one CA (64.9%), including 50.0 % family dysfunction, 42.2 % emotional abuse, 21.2 % physical abuse, 18.8 % neglect, and 5.0 % sexual abuse. Lifetime and 12-month disorders were significantly associated with CAs in multivariable models, although associations with disorder persistence were weaker. Population attributable risk proportions of 12-month disorders associated

¹ Deceased 18 December 2024

² The WMH-ICS collaborators are: Marilisa Boffo, Guilherme Borges, Elsie Breet, Sergio Cruz-Hernández, Mireia Felez, Nadia Garnefski, Praxedis Cristina Hernández Uribe, Petra Hurks, Karen Jacobs, Ana Lucía Jiménez-Pérez, Elisabeth F. Klinkenberg, Vivian Kraaij, Rodrigo Antunes Lima, Francisca Ongecha Owuor, Maria Elena Medina-Mora, Andrea Miranda, Iris Ruby Monroy-Velasco, Tiana Mori, Lonna Munro, Richard J. Munthali, Claudiu C. Papasteri, Maria Abigail Paz-Pérez, Ana Paula Prescivalli, Marisa Rebagliato, Danielle Remmerswaal, Miquel Roca, Elske Saleminck, Claudia van der Heijde, Wouter Voorspoels, Reinout W. Wiers.

with CAs were in the range of 40.7–61.0 % for anxiety and mood disorders and 13.5–55.2 % for substance use disorders.

Conclusion: Six out of ten university students arrive at university having been exposed to CAs. These students have substantially higher risk of mental disorders than other students, primarily due to associations with lifetime risk rather than persistence. Given the considerable distress and impairment caused by mental disorders, these results underscore the need for primary and secondary prevention efforts.

1. Introduction

Cross-national data suggests that between 31.0 % (Auerbach et al., 2018) and 57.4 % (Mason et al., 2025) of incoming university students experienced a mental disorder in the prior 12-months, with the overwhelming majority of these cases (83.1%) having first onsets prior to entering university (Auerbach et al., 2018). These disorders are associated with substantial role impairment (Alonso, Mortier, et al., 2018) and are often left untreated (Alonso, Liu, et al., 2018; Bruffaerts et al., 2019). Identifying contributing factors is key in improving primary and secondary prevention efforts aimed at reducing the mental health burden on young adults during this critical life transition.

Among the most researched contributing factors to poor mental health are childhood adversities (CAs). Although there is no finite perimeter of stressors to be considered as CAs (Finkelhor et al., 2013), core CAs commonly studied are derived from the Adverse Childhood Experiences (ACE) study conducted at Kaiser Permanente in the late 1990s (Felitti et al., 1998; Hughes et al., 2017). These core CAs include exposure to the following experiences before age 18: household dysfunction (including parental mental illness or substance abuse, domestic violence, incarceration, or parental divorce/separation), child abuse (emotional, physical, and sexual), and child neglect. A dose-response association has consistently been found between these CAs and the risk of negative physical and mental health outcomes among children (Vachon et al., 2015), adolescents (Núñez et al., 2024), and adults (Hughes et al., 2017). A recent systematic review and meta-analysis further estimated that CAs accounted for 20.9 % of anxiety cases, 27.5 % of depression cases, and 34.1 % of illicit drug use cases in Europe and 31.3%, 40.1%, and 41.1 % of cases in North America, respectively (Bellis et al., 2019). The latter review further reinforced the notion that estimates like population attributable risk proportions, which represent the proportion of mental disorders that can be linked to CAs, can be a powerful tool for advocacy. These measures help inform public health officials of the contribution of CAs to the onset of debilitating and costly mental health outcomes.

In identifying the association of CAs with mental health among young adults, it is helpful to distinguish between lifetime disorders and 12-month disorders, as well as to examine the role of CAs in the persistence of pre-existing disorders. These distinctions are important for understanding the ways in which CAs contribute to both onset and trajectories of disorders. However, few prior studies have made these distinctions (Kessler et al., 1997), and even fewer have examined joint associations of CA types, number, and frequency of exposure with mental disorders. The only large-scale study to do so, carried out as part of the World Mental Health International College Student (WMH-ICS) Initiative, documented that at least one dimension of CAs was independently associated with risk of lifetime onset and 12-month Major Depressive Disorder (MDD), Bipolar I/II Disorder (BD), Generalized Anxiety Disorder (GAD), Panic Disorder (PD), Alcohol Use Disorder (AUD), and Drug Use Disorder (DUD) in a large cross-national sample of incoming university students across 9 countries. However, CAs were not associated with disorder persistence (Husky et al., 2023). That study also estimated population attributable risk proportions (PARPs) for 12-month disorders and showed that 18.7 % of AUD, 39.3 % of MDD, 43.0 % of GAD, 48.7 % of PD, 49.8 % of DUD, and 57.5 % of BD were associated with exposure to CAs.

The current study builds on the earlier WMH-ICS report by

examining a broader range of disorders defined using DSM-5 criteria in a larger sample of incoming university students across 18 countries, including high-income and low-/middle-income countries. The specific objectives of the present study are to: (1) describe the distribution of CAs among first-year students in the expanded sample of countries; (2) identify multivariable association of CA type, number, and frequency with lifetime disorders, 12-month disorders, and 12-month disorder persistence; and (3) estimate population attributable risk proportions of lifetime, 12-month, and persistent disorders associated with CAs.

2. Methods

2.1. Participants and procedure

Coordinated web-based 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, Northern Ireland, Republic of Ireland, Romania, Saudi Arabia, South Africa, Spain, and Sweden) as part of the WMH-ICS. 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 and an informed consent script. Incentives, which differed across countries (e.g., raffles for store credit coupons, movie passes, cash), were offered in 11 of the 18 countries to encourage survey completion (Supplementary Table 1). Informed consent was required before survey administration. Reminder emails were used to increase response rates. Within-country sample sizes ranged from $n=333$ in Kenya to $n=11,607$ in the Netherlands. Response rates varied between 2.8 % (Kenya) and 65.4 % (Mexico), with a weighted (by achieved sample size) mean response rate across surveys of 20.9%. Ethics approval details by country are available at https://www.hcp.med.harvard.edu/wmh/ftpd/IRB_EthicsApproval_WMh-ICS_DSM-5.pdf.

2.2. Measures

The self-report questionnaire (https://www.hcp.med.harvard.edu/wmh/ftpd/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 et al., 2008).

2.2.1. Childhood adversities

CAs occurring prior to age 18 were assessed using items adapted from the ACE survey (Felitti et al., 1998) and the Childhood Trauma Questionnaire- Short Form (Bernstein et al., 2003). Participants were asked, “How much of the time did you have each of the following experiences up through age 17?” and were provided with a list of experiences. The 13 items assessed five types of CAs: family dysfunction and parental psychopathology (5 items: serious emotional or mental health problems, serious alcohol or drug problems, attempted suicide or death by suicide, involvement in criminal activities, domestic violence), physical abuse (2 items: family member hit so hard that it left bruises or marks, physically abused at home), emotional abuse (2 items: family

member repeatedly said hurtful or insulting things, emotionally abused at home), sexual abuse (2 items: family member touched or made them touch him/her in a sexual way against their will, sexually abused at home), and neglect (2 items: chores that were too hard or dangerous for their age, seriously neglected at home). Responses to each item were reported on a 5-point Likert scale with response options of never (0), rarely (1), sometimes (2), often (3), and very often (4). For analysis, CAs were operationalized to distinguish three dimensions of CA exposure: types, number, and frequency. A CA type was considered present when at least one item within a CA category was reported to have occurred at least “rarely,” reflecting presence versus absence coded as a dichotomous predictor in regression models. Number of CAs was defined as a 0–5 count of the five dichotomous variables indicating the exact number of CA types to which respondents were exposed. Frequency of exposure was calculated by adding scores within each of the five types (5 parent psychopathology items each scored 0–4 and subsequently summed to 0–20, 2 items for each of the other CAs summed to 0–8), dividing each score by the number of items within each type to obtain a 0–4 scale for each type, and then summing these 5 scores to obtain a total scale ranging from 0 to 20. This frequency variable was then truncated for analysis to have a value no greater than 10 due to the rarity of scores greater than 10 in the frequency distribution (Supplementary Table 3).

2.2.2. Mental disorders

Screening measures of DSM-5 GAD, MDD, and PD were obtained from the Composite International Diagnostic Interview Screening Scales, Version 3.2 (CIDI-SC; Kessler, Calabrese, et al., 2013). Diagnoses based on CIDI-SC have been shown to have good concordance with diagnoses (AUROC=0.70–0.78) based on blinded clinical reappraisal interviews (Kessler, Calabrese, et al., 2013; Kessler, Santiago, et al., 2013).

Screening measures of BD and DUD were obtained with 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 with diagnoses based on blinded clinical reappraisal interviews was consistently good (AUROC=0.67–0.75; Khaled et al., 2024).

Screening measures of the other three disorders were obtained with brief specialized dimensional screening scales: post-traumatic stress disorder (PTSD) with the 4-Item 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., 2007); and 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 et al., 2024; Hansen et al., 2023; Kramer et al., 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 (AUROC=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 (AUROC=0.90; Kessler et al., 2005; Kessler et al., 2007).

The AUDIT is a widely used and validated 10-question screening scale for AUD (each item scored in the range 0–4 for a total score of 0–40) that 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 (AUROC=0.91; Toner et al., 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).

For the six mental disorders where lifetime prevalence was assessed, 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 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.

2.2.3. Socio-demographic variables

The socio-demographic variables considered here included respondent age (18–36+ years old), sex at birth (male, female), gender identity (man, woman, another gender), sexual orientation (heterosexual/straight, gay/lesbian, other), and parent education (highest education of either parent categorized into university education, some post-secondary education, high school or less). Dichotomous variables were created for sexual orientation (heterosexual vs. non-heterosexual) and gender modality (cisgender vs. transgender, based on alignment between gender identity and sex at birth). 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.

2.3. Data analysis

A calibration weight was used to adjust for differential within-university response rates by student age and sex at birth compared to university administrative records for the entire population of first-year students. Multiple imputation (MI) by chained equations (Van Buuren, 2012) was then used to adjust for within-survey item non-response, missing data due to minor skip logic errors in a few surveys, and random internal subsampling of survey sections. The latter was a variation on the split questionnaire design (Ragunathan & Grizzle, 1995) to shorten assessments while still obtaining information about all outcomes from all respondents. We did this in universities where concerns were raised about survey length by administering diagnostic stem questions for four diagnoses with long question series (PD, BP, PTSD, and AUD) to all respondents and then administering full diagnostic sections only to a probability subsample of 40 % of the respondents who endorsed the stems. Students who screened negative were coded “No”. Students who screened positive and had the full assessment were coded “Yes” or “No” depending on subsequent question responses. Students who screened positive but were randomized not to have the full assessment (between 13.1 % [BP] and 21.5 % [AUD] across disorders) were assigned predicted probabilities based on MI methods. Simulations reported in an earlier WMH-ICS report show that prevalence estimates were not biased by using MI in this way (Mason et al., 2025).

The CA section of the survey was also internally subsampled to reduce respondent burden, with all respondents who screened positive for a large number of disorders, a 50 % random subsample of respondents who screened positive for fewer disorders, and a 25 % subsample of other respondents administered the CA items. We focused on this subsample of respondents in the analyses reported here. To make this subsample representative of the full sample, respondents with a disorder profile where a random 50 % were assessed for CAs were assigned a weight of 2.0 (i.e., 1/50%) and respondents with a disorder profile where a random 25 % were assessed for CAs (which included all respondents who had no disorders as well as those with only one disorder) were assigned a weight of 4.0 (i.e., 1/25%).

Lifetime prevalence, 12-month prevalence, and 12-month persistence of mental disorders were estimated in the total weighted subsample of respondents with information on CAs. The sample for the persistence analysis was different, though, as persistence was defined as

12-month prevalence among lifetime cases. This meant that we limited the persistence analysis to the subsample of respondents with a lifetime history of disorder. In addition, as some of these respondents had onsets less than 12 months before the survey, we further restricted the analysis of persistence to respondents whose AOO occurred at least two years prior to age-at-interview. We required two rather than one year prior to interview because some proportion of respondents with AOO one year before age at interview had onsets less than 12 months before interview (e.g., onset near the end of age 18 for a respondent who only recently turned 19 at the time of interview).

Multivariable modified Poisson regression models were used to examine associations of socio-demographics and CA type, number, and frequency with lifetime prevalence, 12-month prevalence, and 12-month persistence of mental disorders. Exponentiated Poisson regression coefficients are reported as risk ratios (RRs) with 95 % design-based confidence intervals.

As noted above, the lifetime and 12-month prevalence regression models were both estimated in the total sample, whereas the persistence models were limited to respondents with AOO 2+ years prior to age-at-interview. AOO and time-since-onset (i.e., number of years between AOO and age-at-interview) were included as separate control variables in the persistence models, with 12-month prevalence the outcome in these models.

Finally, population attributable risk proportions (PARPs) were calculated to estimate the proportions of lifetime, 12-month, and persistent mental disorders that were associated with the occurrence of CAs. This was done by calculating the predicted probability of each outcome for each respondent twice, both predictions were based on the model coefficients, but in the first case recoding the observed data so that one or more of the CAs was assumed not to have occurred and in the second case using the observed values of all predictors (Greenland & Drescher, 1993). The ratio of the mean predicted probability of the outcome in the two models defines the proportion of outcome cases that would be expected to remain if the CA had not been present, assuming the RR estimates represent causal effect. 1–this ratio then defines PARP; that is, the proportion of the observed outcome cases due to CAs.

Clustering of observations within universities and MI were both taken into consideration in estimating standard errors. Regression models included control variables for country, socio-demographics, year of survey, and whether students were surveyed in the first three months of the academic year, generating pooled within-country/within-year regression coefficients. Stata/MP (V18) was used to estimate multivariable Poisson models with robust estimates of standard errors to adjust for design effects introduced by clustering, weighting, and MI (Chen et al., 2018). All significance tests were evaluated using 0.05-level two-sided design-based tests. The multiple testing problem, which leads to increased risk of Type I errors, was addressed by evaluating the significance of full predictor sets in each multivariable model and interpreting individually significant coefficients only if the total model was significant.

3. Results

3.1. Prevalence of childhood adversities

The sample included $n=60,719$ first-year students across 18 countries (58.0 % female, mean age=20.7, 46.5 % with at least one parent with some university education). Country-specific socio-demographic characteristics are presented in Supplementary Table 2. Close to two-thirds of all students (64.9%) reported being exposed to at least one type of adversity: 25.5 % to exactly one type, 17.2 % to two types, 13.0 % to three types, and 9.1 % to four or more types (Table 1). Similar patterns were observed across most countries (Supplementary Table 3). The most commonly reported type of CA was family dysfunction (50.0%) followed by emotional abuse (42.2%), physical abuse (21.2%), neglect (18.8%) and sexual abuse (5.0%). The mean frequency of CA

Table 1
Prevalence of childhood adversities by type, number, and frequency of childhood adversities ^a ($n=60,719$).

	Prevalence of childhood adversities	
	Est.	(SE)
Type of childhood adversity (%)^b		
Family dysfunction	50.0	(0.2)
Physical abuse	21.2	(0.2)
Emotional abuse	42.2	(0.2)
Sexual abuse	5.0	(0.1)
Neglect	18.8	(0.2)
Number of types of adversities (%)^b		
1	25.5	(0.2)
2	17.2	(0.2)
3	13.0	(0.2)
4 or 5	9.1	(0.1)
Frequency of adversities (Mean) ^c	2.0	(0.0)

Abbreviations: Est, estimate; SE, standard error.
^a Data was multiply imputed, $m=30$; $n=60,719$.
^b Types and number of childhood adversities represent the percent of respondents who endorsed the questions.
^c Frequency of adversities represent the sum of the exposure to each of the five types of adversities. The exposure to family dysfunction was assessed by summing 5 items, then rescaling that total raw score to 0–4 (never, rarely, sometimes, often, very often) by dividing by 5 and rounding up. The exposure to the other adversities was assessed by summing 2 items, then rescaling the total raw score to 0–4 (never, rarely, sometimes, often, very often) by dividing by 2 and rounding up. This created a 0–20 overall frequency of adversities scale. The upper end of scale scores were truncated at 10, though, given the extreme skew of the distribution with 1.3–7.0 % of respondents across countries having scores of 10+. See Supplementary Table 3 for details.

exposure in the overall sample was 2.0.

3.2. Mental disorders

Consistent with previously reported results for the entire sample (Mason et al., 2025), 66.1 % of respondents in the subsample assessed for CAs screened positive for at least one lifetime disorder and 58.1 % for at least one 12-month disorder. Supplementary Table 4 presents the prevalence of positive screens by country. The most common 12-month disorders were PTSD (33.9%), AUD (24.1%), MDD (20.0%), and GAD (11.1%; Supplementary Table 5). The great majority (87.2%) of lifetime cases with onsets at least two years prior to the interview had 12-month persistence.

3.3. Associations of childhood adversities with lifetime mental disorders

Univariable models showed that each of the three CA dimensions (i.e., type, number and frequency) was strongly and positively associated with each of the six lifetime disorders considered (Supplementary Table 6). Multivariable models that assessed CA type, number, and frequency together along with survey year, country, socio-demographics, and timing of survey completion during the academic year showed that CA type ($F_5=5.6-77.9$, $p<0.001$), number ($F_3=3.3-28.3$, $p=0.020-0.001$), and frequency of CAs ($F_1=136.8-449.8$, $p<0.001$) all had significant associations with each lifetime disorders (Table 2). Individual CA types had consistently positive associations (RR=1.0-1.5) that were, for the most part (22 of 30 coefficients), statistically significant at the $p=0.05$ level. Family dysfunction and emotional abuse had the highest RRs across disorders, with an inter-quartile range (IQR) of RR=1.3-1.4 and RR=1.4, respectively. Number of CAs, in comparison, was for the most part negatively associated with all lifetime disorders (IQR RR=0.7-0.9, 12 of 18 coefficients statistically significant at the $p=0.05$ level). This negative association does not mean that risk of disorders decreased with increasing number of disorders, but rather that the positive associations of the individual CA types with risk were dampened as number of CA types increased. In other words, risk

Table 2

Multivariable associations of childhood adversities with positive screens for lifetime mental disorders^{a,b} (n=60,719).

	BP	DUD	GAD	MDD	PD	PTSD
	RR (95 % CI)	RR (95 % CI)	RR (95 % CI)	RR (95 % CI)	RR (95 % CI)	RR (95 % CI)
Type of childhood adversity^c						
Family dysfunction	1.3* (1.1- 1.5)	1.5* (1.3- 1.6)	1.3* (1.2- 1.4)	1.3* (1.3- 1.4)	1.3* (1.2- 1.4)	1.3* (1.2- 1.3)
Physical abuse	1.1 (0.9- 1.3)	1.1 (1.0- 1.3)	1.0 (0.9- 1.1)	1.1* (1.0- 1.2)	1.0 (0.8- 1.1)	1.1* (1.0- 1.1)
Emotional abuse	1.4* (1.2- 1.6)	1.2* (1.0- 1.3)	1.4* (1.3- 1.6)	1.4* (1.3- 1.5)	1.4* (1.2- 1.6)	1.4* (1.3- 1.4)
Sexual abuse	1.1 (0.9- 1.3)	1.3* (1.2- 1.5)	1.0 (0.9- 1.1)	1.1* (1.0- 1.1)	1.0 (0.9- 1.2)	1.1* (1.1- 1.1)
Neglect	1.4* (1.1- 1.6)	1.3* (1.2- 1.5)	1.2* (1.1- 1.3)	1.2* (1.1- 1.3)	1.1 (1.0- 1.3)	1.2* (1.2- 1.3)
F ₅	5.6*	17.3*	23.7*	34.8*	12.4*	77.9*
Number of types of adversities^c						
1	-	-	-	-	-	-
2	1.0 (0.8- 1.3)	1.1 (1.0- 1.3)	0.9 (0.8- 1.1)	0.9* (0.8- 1.0)	0.9 (0.8- 1.1)	0.9* (0.9- 0.9)
3	0.7 (0.5- 1.0)	0.9 (0.7- 1.2)	0.8* (0.6- 0.9)	0.7* (0.7- 0.8)	0.8* (0.6- 1.0)	0.8* (0.7- 0.8)
4 or 5	0.5* (0.3- 0.9)	0.7* (0.5- 1.0)	0.5* (0.4- 0.7)	0.5* (0.5- 0.7)	0.7* (0.5- 0.9)	0.6* (0.6- 0.7)
F ₃	8.7*	11.2*	16.1*	19.3*	3.3*	28.3*
Frequency of adversities^c						
1.2*	1.2*	1.1*	1.2*	1.1*	1.1*	1.1*
(1.2- 1.2)	(1.1- 1.1)	(1.1- 1.2)	(1.1- 1.2)	(1.1- 1.2)	(1.1- 1.2)	(1.1- 1.1)
F ₁	136.8	137.9*	449.8*	244.4*	156.0*	350.3*

Abbreviations: BD, bipolar I/II disorder; DUD, drug use disorder; GAD, generalized anxiety disorder; MDD, major depressive disorder; PD, panic disorder; PTSD, post-traumatic stress disorder; RR, relative risk; 95 % CI, 95 % design-based confidence interval of RR.

^a Risk ratios and 95 % CIs were obtained from modified log Poisson regression models with robust standard errors. All models controlled for survey year, country, socio-demographics, and timing of survey completion during the academic year.

^b Data was multiply imputed, $m=30$; $n=60,719$. However, childhood adversity measures were not imputed for this analysis and respondents not assessed for childhood adversities were omitted from this analysis.

^c Types of childhood adversities were coded as 0/1 indicators. Frequency of adversities represent the sum of the 0-4 frequency scale calculated for each type of adversity (possible range 0-20).

* Significant difference, $p < 0.05$, two-tailed design-based test.

increased at a decreasing rate as number of CA types increased. Lastly, frequency of CAs was moderately but significantly associated with lifetime prevalence (RR=1.1-1.2 across outcomes and all coefficients significant at the $p=0.05$ level).

3.4. Associations of childhood adversities with 12-month disorders

As in the analysis of lifetime prevalence, univariable models showed that each of the three CA dimensions was strongly and positively associated with each of the eight 12-month disorders (Supplementary Table 7). Multivariable models showed that CA type ($F_5=6.4-59.0$, $p<0.001$), number ($F_3=3.6-17.0$, $p=0.014-0.001$), and frequency ($F_1=27.3-422.1$, $p<0.001$) all had significant associations with each 12-

month disorder (Table 3), with the exception of number of CAs and AUD ($F_3=0.7$, $p=0.52$). Again, consistent with the lifetime models, individual CA types had consistently positive associations (RR=1.0-1.5) with each 12-month disorder that were, for the most part (28 of 40 coefficients), statistically significant at the $p=0.05$ level. Family dysfunction and emotional abuse had the highest RRs across disorders (IQR RR=1.3-1.4 and RR=1.1-1.5, respectively). Similar to the lifetime models, number of CAs were for the most part (the exception being AUD) negatively associated with each 12-month disorder (IQR RR=0.7-0.9, 13 of 21 coefficients statistically significant at the $p=0.05$ level), while frequency of CAs was moderately but significantly associated with each 12-month disorder (RRs=1.0 to 1.2 across outcomes and all coefficients significant at the $p=0.05$ level).

3.5. Associations between childhood adversities and disorder persistence

Univariable models showed that each of the three CA dimensions was positively associated with 12-month persistence of each of the six disorders considered other than for the association of CA number with DUD ($F_4=2.4$, $p=0.05$; Supplementary Table 8). Multivariable models (Table 4) showed that CA type was associated significantly only with persistence of MDD and PTSD ($F_5=5.9$ and 4.0, respectively), that these associations were modest in magnitude, and limited to family dysfunction for MDD (RR=1.1) and emotional abuse and neglect for MDD and PTSD (RR=1.1). Number of CAs was negatively associated only with persistence of MDD ($F_1=2.7$, $p=0.044$), with a similar rate of decrease (RR=0.9) for each additional increase in the number of CAs. Frequency of CAs, finally, was associated significantly only with persistence of PD and PTSD (RR=1.0; $F_1=4.3$ and 12.6, respectively).

3.6. Population-attributable risk proportions (PARPs)

PARPs were calculated to determine the proportions of lifetime and 12-month disorders that were associated with CAs (Table 5). PARPs of lifetime disorders overall ranged from 35.0 % to 56.4 % across disorders (Fig. 1), with the PARPs of individual CA types of higher estimates for family dysfunction (IQR=12.6-16.8%) and emotional abuse (IQR=14.7-23.9%) than other CA types. Overall PARPs of 12-month disorders ranged from 13.5 % to 61.0%, with PARPs for individual CA types again higher for family dysfunction (IQR=14.1-18.5%) and emotional abuse (IQR=15.9-26.0%) than other CA types. In contrast, overall PARPs of CAs with persistent disorders were considerably lower (5.7-11.6%), but again with higher estimates for family dysfunction (IQR=1.7-2.0%) and emotional abuse (IQR=1.8-4.7%) than other CA types.

4. Discussion

This large cross-national study examined the associations of CAs with a broad range of DSM-5 disorders. Several noteworthy findings emerged. First, six of ten incoming students reported exposure to at least one CA. Second, in multivariable models adjusting for key socio-demographic variables, CA type, number and frequency were significantly associated with all lifetime and 12-month disorders considered, with the exception of number of CAs and AUD. However, CAs showed a weaker association with persistent disorders compared to onset risk. Lastly, the proportion of lifetime and 12-month disorders associated with CAs was substantial across most conditions.

Eighteen countries participated in this global study, covering Africa, Asia, Australasia, the Americas, East and West Asia, and Europe. The majority of incoming students in each country reported exposure to at least one of the five types of CAs examined. Across all countries, the most common type of CA reflected family dysfunction (i.e., parental mental illness or substance use, domestic violence, or incarceration), followed by emotional abuse, physical abuse, and child neglect. These findings are consistent with CA prevalence data collected in community samples of both children and adults (Benjet, 2010; Cuijpers et al., 2011; Felitti

Table 3Multivariable associations of childhood adversities with positive screens for 12-month disorders^{a,b} (*n*=60,719).

	ADHD	AUD	BP	DUD	GAD	MDD	PD	PTSD
	RR (95 % CI)	RR (95 % CI)	RR (95 % CI)	RR (95 % CI)	RR (95 % CI)	RR (95 % CI)	RR (95 % CI)	RR (95 % CI)
Type of childhood adversity^c								
Family dysfunction	1.3* (1.2-1.4)	1.1* (1.1-1.2)	1.3* (1.2-1.6)	1.5* (1.3-1.7)	1.3* (1.2-1.5)	1.4* (1.3-1.5)	1.3* (1.2-1.5)	1.3* (1.2-1.4)
Physical abuse	1.2* (1.0-1.3)	1.0 (1.0-1.1)	1.1 (0.9-1.3)	1.1 (0.9-1.3)	1.0 (0.9-1.1)	1.1* (1.0-1.2)	1.0 (0.8-1.1)	1.1* (1.0-1.1)
Emotional abuse	1.5* (1.3-1.7)	1.0 (0.9-1.0)	1.5* (1.2-1.8)	1.1 (1.0-1.3)	1.5* (1.3-1.6)	1.5* (1.4-1.6)	1.5* (1.3-1.7)	1.5* (1.4-1.6)
Sexual abuse	1.1 (1.0-1.3)	1.1* (1.0-1.2)	1.1 (1.0-1.3)	1.4* (1.2-1.6)	1.0 (0.9-1.1)	1.1* (1.0-1.2)	1.1 (1.0-1.2)	1.1* (1.0-1.1)
Neglect	1.2* (1.0-1.4)	1.1 (1.0-1.2)	1.5* (1.2-1.8)	1.3* (1.1-1.5)	1.2* (1.1-1.4)	1.2* (1.1-1.3)	1.2* (1.0-1.3)	1.3* (1.2-1.3)
F ₅	9.0*	6.4*	6.7*	13.1*	22.5*	39.7*	12.7*	59.0**
Number of adversities^c								
1	-	-	-	-	-	-	-	-
2	0.9 (0.8-1.1)	1.0 (0.9-1.1)	1.0 (0.8-1.3)	1.2 (1.0-1.4)	0.9 (0.8-1.0)	0.9* (0.8-0.9)	0.9 (0.8-1.1)	0.9* (0.8-0.9)
3	0.8* (0.6-1.0)	1.0 (0.8-1.1)	0.7* (0.5-1.0)	1.0 (0.7-1.3)	0.7* (0.6-0.9)	0.7* (0.6-0.8)	0.8 (0.6-1.0)	0.8* (0.7-0.8)
4 or 5	0.6* (0.4-0.8)	0.9 (0.7-1.1)	0.5* (0.3-0.8)	0.8 (0.5-1.3)	0.5* (0.4-0.7)	0.5* (0.4-0.6)	0.6* (0.4-0.9)	0.6* (0.5-0.7)
F ₃	4.6*	0.7	10.1*	6.8*	16.0*	17.0*	3.6*	16.9*
Frequency of adversities^c								
F ₁	1.1* (1.1-1.1)	1.0* (1.0-1.1)	1.2* (1.2-1.2)	1.1* (1.1-1.2)	1.2* (1.2-1.2)	1.1* (1.1-1.1)	1.2* (1.1-1.2)	1.1* (1.1-1.1)
F ₁	81.5*	27.3*	142.9*	86.3*	422.1*	229.5*	156.8*	257.1*

Abbreviations: ADHD, attention deficit/hyperactivity disorder; AUD, alcohol use disorder; BD, bipolar I/II disorder; DUD, drug use disorder; GAD, generalized anxiety disorder; MDD, major depressive disorder; PD, panic disorder; PTSD, post-traumatic stress disorder; RR, relative risk; 95 % CI, 95 % design-based confidence interval of RR.

^a Risk ratios and CIs were obtained from modified log Poisson regression models with robust standard errors. All models controlled for survey year, country, socio-demographics, and timing of survey completion during the academic year.

^b Data was multiply imputed, *m*=30; *n*=60,719. However, childhood adversity measures were not imputed for this analysis and respondents not assessed for childhood adversities were omitted from this analysis.

^c Types of childhood adversities were coded as 0/1 indicators. Frequency of adversities represent the sum of the 0-4 frequency scale calculated for each type of adversity (possible range 0-20).

* Significant difference, *p* < 0.05, two-tailed design-based test.

Table 4Multivariable associations of childhood adversities with positive screens for 12-month disorder persistence^{a,b}.

	BP		DUD		GAD		MDD		PD		PTSD	
	RR	(95 % CI)	RR	(95 % CI)	RR	(95 % CI)	RR	(95 % CI)	RR	(95 % CI)	RR	(95 % CI)
Type of childhood adversity^c												
Family dysfunction	1.1	(1.0-1.1)	1.0	(1.0-1.1)	1.0	(1.0-1.1)	1.1*	(1.0-1.1)	1.0	(1.0-1.1)	1.0	(1.0-1.1)
Physical abuse	1.0	(0.9-1.1)	1.0	(0.9-1.1)	1.0	(1.0-1.1)	1.0	(1.0-1.1)	1.0	(0.9-1.1)	1.0	(1.0-1.1)
Emotional abuse	1.1	(1.0-1.2)	1.0	(0.9-1.1)	1.0	(1.0-1.1)	1.1*	(1.0-1.1)	1.1	(1.0-1.2)	1.1*	(1.0-1.1)
Sexual abuse	1.0	(0.9-1.1)	1.1	(1.0-1.2)	1.0	(1.0-1.1)	1.0	(1.0-1.1)	1.0	(1.0-1.1)	1.0	(1.0-1.1)
Neglect	1.1	(1.0-1.2)	1.0	(0.9-1.1)	1.0	(1.0-1.1)	1.1*	(1.0-1.1)	1.0	(1.0-1.1)	1.1*	(1.0-1.1)
F ₅	1.1		1.4		0.9		5.9*		0.7		4.0*	
Number of adversities^c												
1	-		-		-		-		-		-	
2	1.0	(0.9-1.1)	1.1	(1.0-1.2)	1.0	(0.9-1.0)	0.9*	(0.9-1.0)	1.0	(0.9-1.1)	1.0	(0.9-1.0)
3	0.9	(0.8-1.1)	1.1	(0.9-1.3)	1.0	(0.9-1.0)	0.9*	(0.9-1.0)	1.0	(0.9-1.2)	1.0	(0.9-1.0)
4 or 5	0.9	(0.7-1.1)	1.2	(0.9-1.5)	0.9	(0.8-1.0)	0.9*	(0.8-1.0)	0.9	(0.8-1.2)	0.9	(0.8-1.1)
F ₃	1.6		1.0		1.0		2.7*		1.1		0.7	
Frequency of adversities^c												
F ₁	1.0	(1.0-1.0)	1.0	(1.0-1.0)	1.0	(1.0-1.0)	1.0	(1.0-1.0)	1.0*	(1.0-1.0)	1.0*	(1.0-1.0)
F ₁	3.3		0.3		1.2		1.5		4.3*		12.6*	
(<i>n</i>) ^d	(3,026)		(4,881)		(8,809)		(15,460)		(6,213)		(24,872)	

Abbreviations: BD, bipolar I/II disorder; DUD, drug use disorder; GAD, generalized anxiety disorder; MDD, major depressive disorder; PD, panic disorder; PTSD, post-traumatic stress disorder; RR, relative risk; 95 % CI, 95 % design-based confidence interval of RR.

^a Risk ratios and CIs were obtained from modified log Poisson regression models with robust standard errors, where cases equal respondents with first onsets of the outcome disorders at least two years before age at interview. All models controlled for survey year, country, socio-demographics, and timing of survey completion during the academic year.

^b Data was multiply imputed, *m*=30; *n*=3,026-24,872. However, childhood adversity measures were not imputed for this analysis and respondents not assessed for childhood adversities were omitted from this analysis.

^c Types of childhood adversities were coded as 0/1 indicators. Frequency of adversities represent the sum of the 0-4 frequency scale calculated for each type of adversity (possible range 0-20).

^d Sample sizes represent the numbers of respondents with lifetime histories of the different disorders as of two years before age at interview, as the outcomes are 12-month prevalence among lifetime cases.

* Significant difference, *p* < .05, two-tailed design-based test.

et al., 1998; Hillis et al., 2016; Kessler et al., 2010; Madigan et al., 2023; Madigan et al., 2025; Merrick et al., 2018), underscoring the commonality of CA exposure worldwide. Furthermore, the cross-national prevalence of emotional abuse (42.2%), physical abuse (21.2%), and neglect (18.8%) found here is consistent with meta-analytic data reporting global estimates of 36.3 % for emotional abuse (Stoltenborgh et al., 2012), 22.6 % for physical abuse (Stoltenborgh et al., 2013), and

between 16.3 % for physical and 18.3 % for emotional neglect (Stoltenborgh et al., 2013). The prevalence of child maltreatment observed here, however, is lower for physical abuse and emotional abuse and higher for neglect when compared to the Australian Child Maltreatment Study (ACMS): 30.9 % for emotional abuse, 32.0 % for physical abuse, and 8.9 % for neglect (Mathews et al., 2023). Our findings align with data from the UK regarding estimates of the

Table 5

Population-attributable risk proportions (PARPs) of positive screens for lifetime and 12-month mental disorders with the occurrence of types, adjusted for number and frequency of CAs, and demographics^a ($n=60,719$).

	ADHD	AUD	BP	DUD	GAD	MDD	PD	PTSD
Lifetime								
Family dysfunction	-	-	15.5	23.3	16.8	12.6	16.8	10.3
Emotional abuse	-	-	23.8	14.7	25.0	16.2	23.9	14.3
Physical abuse	-	-	1.9	3.2	-0.3	-0.2	-0.5	0.3
Sexual abuse	-	-	1.3	3.0	0.1	0.3	0.9	0.4
Neglect	-	-	8.7	8.4	4.6	1.6	4.1	3.1
All adversities	-	-	56.4	53.9	54.2	41.0	47.0	35.0
12-month persistence^{b,c}								
Family dysfunction	-	-	1.7	6.6	0.9	2.0	1.8	1.8
Emotional abuse	-	-	2.3	1.0	1.8	2.6	4.7	5.9
Physical abuse	-	-	-1.1	0.5	0.0	0.0	-0.3	0.2
Sexual abuse	-	-	0.0	0.8	0.2	0.1	0.2	0.2
Neglect	-	-	1.1	1.1	0.3	1.1	1.0	1.5
All adversities	-	-	11.6	6.0	5.7	7.5	10.2	10.9
12-month								
Family dysfunction	14.2	7.5	16.6	26.9	17.1	14.1	18.5	11.8
Emotional abuse	20.5	1.5	25.6	15.9	26.0	18.5	27.2	18.5
Physical abuse	3.9	1.1	0.9	3.9	-0.1	-0.3	-0.9	0.4
Sexual abuse	0.9	0.6	1.5	3.5	0.3	0.3	1.2	0.5
Neglect	3.3	1.8	9.7	9.9	4.9	2.5	5.0	4.2
All adversities	43.7	13.5	61.0	55.2	56.5	44.6	52.2	40.7

Abbreviations: ADHD, attention deficit/hyperactivity disorder; AUD, alcohol use disorder; BD, bipolar I/II disorder; DUD, drug use disorder; GAD, generalized anxiety disorder; MDD, major depressive disorder; PD, panic disorder; PTSD, post-traumatic stress disorder.

^a The simulations used to calculate PARPs for individual adversities simultaneously changed information on type, number, and frequency in models that controlled for survey year, country, socio-demographics, and timing of survey completion during the academic year. So, for example, if a respondent had 3 adversities including neglect with a frequency of 3, the simulation for neglect set neglect to 0, set number of adversities to 2, and recoded the summary frequency score to subtract 3 from the total for that respondent.

^b Persistence was not estimated for ADHD and AUD because no information was obtained for these disorders about lifetime cases without 12-month prevalence.

^c Sample sizes for 12-month persistence represent the numbers of respondents with lifetime histories of the different disorders as of two years before age at interview, as the outcomes are 12-month prevalence among lifetime cases (BD, 3,026; DUD, 4,881; GAD, 8,809; MDD, 15,460; PD, 6,213; PTSD, 24,872).

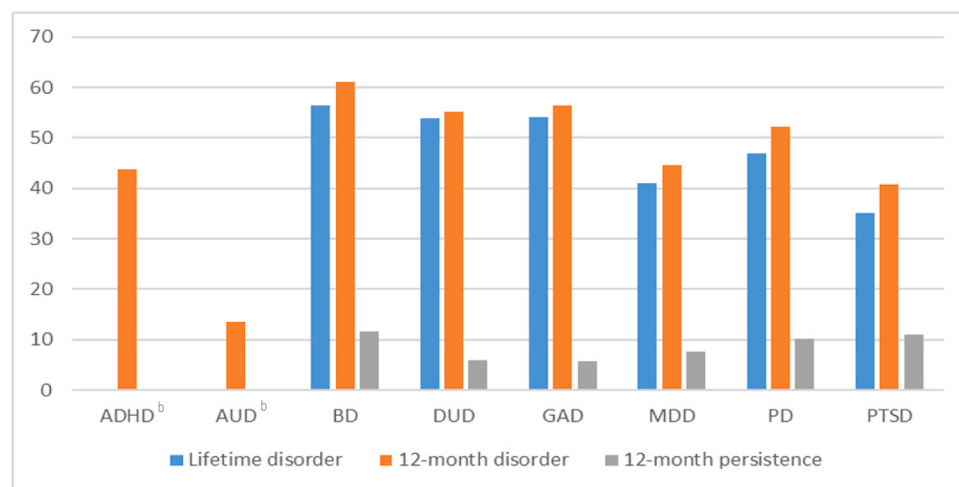


Fig. 1. Population-attributable risk proportions (PARPs) of positive screens for lifetime and 12-month mental disorders, and 12-month persistence, with the occurrence of all CA types, adjusted for number and frequency, and demographics^a ($n=60,719$).

Abbreviations: ADHD, attention deficit/hyperactivity disorder; AUD, alcohol use disorder; BD, bipolar I/II disorder; DUD, drug use disorder; GAD, generalized anxiety disorder; MDD, major depressive disorder; PD, panic disorder; PTSD, post-traumatic stress disorder. Persistence was not estimated for ADHD and AUD because no information was obtained for these disorders about lifetime cases without 12-month prevalence.

prevalence of neglect (16%) but are higher than the prevalence of 8.4 % physical abuse and 6.9 % of emotional abuse (Radford et al., 2013). Data from the National Survey of Children's Exposure to Violence (NSCEV) yielded lower rates of emotional abuse (23.95%), and similar rates of physical abuse (18.1%), and neglect (18.4%) among 14 to 17-year-olds (Finkelhor et al., 2015). The cross-country prevalence of sexual abuse (5.0%) found here was lower than the 12.7 % reported in a meta-analysis (Stoltenborgh et al., 2011), higher than estimates from the NSCEV data (0.2 % among the 14-17 year olds; Finkelhor et al., 2015)

and significantly lower than the 25.7 % of sexual abuse among 16 to 24 year olds, and 28.5 % groups reported in the ACMS across all age (Mathews et al., 2023), or the 24.1 % estimated in the UK (Radford et al., 2013). The prevalence estimated here, however, is consistent with estimates from the World Mental Health surveys, yielding a 1.6 % prevalence of sexual abuse across nationally or regionally representative samples from 21 countries (Kessler et al., 2010). Differences in sampling and operationalization of CA types, including the number of items used to define the presence or absence of any given type, are likely the source

of the variation observed in prevalence of exposure across studies. Importantly, the five types of CAs investigated here did not take into account broader CAs involving peers and the larger community. Studies incorporating a wider range of CA items reflecting exposure to bullying, discrimination, community violence, or socioeconomic disadvantage would be expected to see even higher rates of CA exposure (Cronholm et al., 2015; Finkelhor et al., 2013; Husky et al., 2023; Madigan et al., 2025). Furthermore, as has been consistently reported in the literature, exposure to multiple CAs is common (Dong et al., 2004; Kessler et al., 2010; Madigan et al., 2023), including when multi-type maltreatment (Higgins et al., 2023) or polyvictimization (Finkelhor et al., 2007) are examined. In the present study, 17.2 % of university students reported exposure to two types of CAs, another 13 % reported three types, and 9.1 % reported four or more types of CAs. As the proportion of persons who experienced multiple CAs is a function of the number of individual CA types considered, having examined family dysfunction as a single type of CA in the present analyses, rather than considering its components individually, is likely to have led to a smaller proportion of persons reporting multiple CA types.

Consistent with an extensive body of research (e.g., Bellis et al., 2019; Chapman et al., 2004; Kessler et al., 2010; Lindert et al., 2014; Lippard & Nemeroff, 2020), we found that CAs were associated with all the lifetime and 12-month mental disorders considered here, pointing to CAs acting as a non-specific contributing factor to psychopathology; i.e. exposure to CAs is not uniquely associated with a subset of specific mental disorders, nor is the effect of CAs limited to the occurrence of a subset of specific types of CAs (Chen et al., 2025; Green et al., 2010; Haidl et al., 2021; Kessler et al., 2010; Lindert et al., 2014; McKay et al., 2022; Scott et al., 2023). In contrast, CAs were only weakly associated with disorder persistence in the case of MDD, PD, and PTSD and were not associated with disorder persistence of BD, GAD, and DUD. This finding of a weaker association of CAs with persistence aligns with prior studies examining disorder persistence (Kessler et al., 1997), particularly among young adults (McLaughlin et al., 2010), including our own work with an earlier WMH-ICS sample (Husky et al., 2023). The weaker association of CAs with disorder persistence suggests that once disorders initiate, other factors contribute to their persistence over time. Such factors include disorder severity, psychiatric comorbidity, and lack of social support (Fenton et al., 2012; Hovenkamp-Hermelink et al., 2021; Spijker et al., 2004) and point to the importance of facilitating access to appropriate care for students with mental health problems.

Taken together, these findings document the need to focus on CAs as key correlates of mental disorders and suggest that distinguishing onset and persistence may help elucidate the mechanisms at play. The results also highlight the enormous importance of CAs, as PARP estimates suggest that between 40 % and 60 % of cases within most disorders are associated with CAs. A much lower PARP was found for AUD (13.5%), which was assessed only for the year before the survey. These estimates suggest that either eliminating CAs or developing interventions to blunt the effects of CAs, to the extent that the associations found here are causal, could potentially prevent most of the mental disorders found among first-year students. These PARP estimates are consistent with those found in general population surveys across the world (Afifi et al., 2008; Green et al., 2010; Kessler et al., 2010) as well as with a meta-analysis of adults in North America and Europe (Bellis et al., 2019), and a recent review focused on child maltreatment (Grummitt et al., 2024). Furthermore, consistent with the findings noted above regarding disorder persistence, PARPs of persistent disorders were lower, ranging from 5.7 % of GAD to 11.6 % of BD attributable to CAs.

CAs have long been recognized as strong predictors of ill health and continue to be investigated as key contributing factors associated with significant mental health problems and years lost to disability. However, despite this robust evidence, policy change has been slow to incorporate this knowledge into implementing evidence-based primary and secondary prevention efforts, highlighting the need for continued policy-relevant research in this area (Bellis et al., 2019). The United Nations

has urged nations to eliminate violence against children, and WHO highlights in its INSPIRE initiative that multi-sectorial interventions may be implemented to reduce violence against children (World Health Organization, 2016). Initiatives supporting families with parents experiencing mental health problems may further contribute to promoting healthy child development (Jeong et al., 2021; Toffol et al., 2024). In parallel with such efforts, secondary prevention may involve screening incoming students for CA exposure and mental health problems and facilitating access to evidence-based mental health services. Data shows that despite the availability of such mental health resources, only a minority of university students with mental health needs seek professional help (Bruffaerts et al., 2019), as significant barriers limiting access to care remain (Ebert et al., 2019; Horwitz et al., 2020).

The mechanisms involved in the high proportions of mental illness linked to CAs are complex and were not investigated here. In the case of having a parent with mental illness or substance use disorder, familial transmission may be at play both through genetic and shared environmental factors (Ballard et al., 2019; Merikangas et al., 2014). Exposure to early life stressors, including childhood maltreatment, has also been found to have notable consequences on neural development both at the structural and functional level (Breslin et al., 2024; Doretto et al., 2024; McLaughlin et al., 2019) with evidence of differential effects of abuse and neglect on the nervous system (McLaughlin et al., 2019). Exposure to threats in early life has also been linked to accelerated biological aging (Colich et al., 2020). Individuals exposed to child maltreatment also exhibit greater activation of the hypothalamic-pituitary-adrenal axis, and elevated levels of inflammation as compared to non-maltreated individuals, further contributing to poor mental health outcomes later in life (Danese & McEwen, 2012). Notwithstanding these complex mechanisms, the present findings quantify the extent to which the mental health burden of young adults could be reduced by addressing CA exposure and should further alert policy makers to the critical role of early life experiences in later human development. Our findings also support the need to address mental health in universities by offering evidence-based interventions to limit the risk of disorder persistence among those who already experience mental illness at university entry.

To our knowledge, this is the first large-scale cross-national study to investigate the association of CAs with lifetime, 12-month, and persistent disorders using DSM-5 criteria and to provide associated PARP estimates. Despite these strengths, several limitations should be acknowledged. First, we could not ascertain whether CAs preceded disorder onset in all cases because the specific timing of CA exposure was not assessed. As a result, some individuals may have experienced CAs following the first onset of their disorder rather than the reverse. Future studies should incorporate detailed assessments of the timing and duration of CA exposure to better establish temporal relationships with mental disorder onset and persistence and further examine these associations using longitudinal designs. Furthermore, it is also possible that current disorders may have affected the recall of CAs, thereby inflating the current observations (Green et al., 2010). Second, response rates were generally low, which might have introduced bias in the estimates derived from multivariable models examining associations between CAs and mental disorders (Amaya & Presser, 2016). Lastly, we did not examine individual CA types within the family dysfunction category due to the low prevalence of some items, such as parental incarceration or parental suicidal behavior.

Despite these limitations, the present study reinforces the strong body of evidence documenting the high prevalence of CAs cross-nationally, with close to two-thirds of university students reporting exposure to at least one type of adversity. The findings further add to the literature linking negative early life experiences with the onset of mental disorders. Across all countries covering diverse regions with different socio-economic and cultural contexts, approximately one-half of mental disorders found among first-year university students are associated with exposure to CAs. Considering the substantial burden associated with CAs, there is an urgent need for coordinated global and institutional

responses to both limit exposure to CAs and reduce their mental health consequences. Screening for mental health problems and for exposure to early life adversities, combined with facilitating access to evidence-based treatment within universities, is warranted.

Funding

Funding to support this initiative was received from the National Institute of Mental Health (NIMH) R56MH109566, 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/ 1114717N), 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.

China: Shandong Taishan Scholar Young Expert Project (tsqn201909145), awarded to Yan Liu.

France: Institut Universitaire de France.

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

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; Protestant 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 and a James Hume Bequest Grant.

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 a grant of the Ministry of Research, Innovation and Digitization, CNCS - UEFISCDI, project number PN-IV-P1-PCE-2023-1854, within PNCIDI IV 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 -Consortio 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).

Role of the Funding source

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

Data availability statements

The data analyzed in this study is subject to the following licenses/restrictions: The WMH-ICS data sharing agreement limits access of this data to members of the consortium. Requests to access these datasets should be directed to RCK, kessler@hcp.med.harvard.edu.

CRediT authorship contribution statement

Mathilde M. Husky: Writing – review & editing, Writing – original draft, Supervision, Investigation, Conceptualization. **Sue Lee:** Writing – review & editing, Validation, Formal analysis. **Nancy A. Sampson:** Writing – review & editing, Writing – original draft, Supervision, Project administration, Methodology, Data curation. **Shelby Borowski:** Writing – review & editing, Validation, Formal analysis. **Yesica Albor:** Writing – review & editing, Data curation. **Ahmad N. Alhadi:** Writing – review & editing, Data curation. **Jordi Alonso:** Writing – review & editing. **Nouf K. Al-Saud:** Writing – review & editing. **Yasmin A. Altwaijri:** Writing – review & editing. **Claes Andersson:** Writing – review & editing. **Lukoye Atwoli:** Writing – review & editing. **Caroline Ayuya Muaka:** Writing – review & editing. **Patricia M. Báez-Mansur:** Writing – review & editing. **Laura Ballester:** Writing – review & editing. **Jason Bantjes:** Writing – review & editing. **Harald Baumeister:** Writing – review & editing. **Marcus Bendtsen:** Writing – review & editing. **Corina Benjet:** Writing – review & editing. **Anne H. Berman:** Writing – review & editing. **Ronny Bruffaerts:** Writing – review & editing, Data curation. **Paula Carrasco:** Writing – review & editing, Data curation. **Silver C.N. Chan:** Writing – review & editing, Data curation. **Irina F. Cohut:** Writing – review & editing, Data curation. **María Anabell Covarrubias Díaz Couder:** Writing – review & editing, Data curation. **Paula Cristóbal-Narváez:** Writing – review & editing, Data curation. **Marcelo A. Crockett:** Writing – review & editing, Data curation. **Pim Cuijpers:** Writing – review & editing, Funding acquisition, Data curation. **Oana A. David:** Writing – review & editing, Funding acquisition, Data curation. **Dong Dong:** Writing – review & editing, Data curation. **David D. Ebert:** Writing – review & editing, Funding acquisition, Data curation. **Carlos G. Forero:** Writing – review & editing, Data curation. **Jorge Gaete:** Writing – review & editing, Funding acquisition, Data curation. **Margalida Gili:** Writing – review & editing, Data curation. **Raúl Gutiérrez-**

García: Writing – review & editing, Data curation. **Josep Maria Haro:** Writing – review & editing, Funding acquisition, Data curation. **Penelope Hasking:** Writing – review & editing, Funding acquisition, Data curation. **Xanthe Hunt:** Writing – review & editing, Funding acquisition, Data curation. **Florence Jaguga:** Writing – review & editing, Data curation. **Leontien Jansen:** Writing – review & editing, Data curation. **Álvaro I. Langer:** Writing – review & editing, Funding acquisition, Data curation. **Irene Léniz:** Writing – review & editing, Data curation. **Yan Liu:** Writing – review & editing, Funding acquisition, Data curation. **Christine Lochner:** Writing – review & editing, Data curation. **Scarlett Mac-Ginty:** Writing – review & editing, Funding acquisition, Data curation. **Vania Martínez:** Writing – review & editing, Funding acquisition, Data curation. **Andre Mason:** Writing – review & editing, Data curation. **Muthoni Mathai:** Writing – review & editing, Data curation, Conceptualization. **Margaret McLafferty:** Writing – review & editing, Data curation. **Elaine K. Murray:** Writing – review & editing, Funding acquisition, Data curation. **Catherine M. Musyoka:** Writing – review & editing, Data curation. **Cătălin Nedelcea:** Writing – review & editing, Data curation. **Daniel Núñez:** Writing – review & editing, Funding acquisition, Data curation. **Siobhan M. O'Neill:** Writing – review & editing, Data curation. **José A. Piqueras:** Writing – review & editing, Data curation. **Codruta A. Popescu:** Writing – review & editing, Data curation. **Charlene Rapsey:** Writing – review & editing, Data curation. **Kealagh Robinson:** Writing – review & editing, Data curation. **Tiscar Rodriguez-Jimenez:** Writing – review & editing, Data curation. **Wylene Saal:** Writing – review & editing, Data curation. **Damian Scarf:** Writing – review & editing, Data curation. **Oi-ling Siu:** Writing – review & editing, Data curation. **Dan J. Stein:** Writing – review & editing, Data curation. **Sascha Y. Struijs:** Writing – review & editing, Data curation. **Cristina T. Tomoiaga:** Writing – review & editing, Data curation. **Karla Patricia Valdés-García:** Writing – review & editing, Data curation. **Eunice Vargas-Contreras:** Writing – review & editing, Data curation. **Shelby Vereecke:** Writing – review & editing, Data curation. **Daniel V. Vigo:** Writing – review & editing, Funding acquisition, Data curation. **Angel Y. Wang:** Writing – review & editing, Data curation. **Samuel Y.S. Wong:** Writing – review & editing, Data curation. **Ronald C. Kessler:** Writing – review & editing, Writing – original draft, Supervision, Resources, Methodology, Investigation, Funding acquisition, Conceptualization.

Declaration of competing interest

RB reports grant funding from Eli Lilly (IIT-H6U-BX-1002). 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, RCK 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. DJS has received consultancy honoraria from Discovery Vitality,

Johnson & Johnson, Kanna, L'Oreal, Lundbeck, Orion, Servier, Seaport Therapeutics, Takeda, Vistagen, and Wellcome. DVV reports grant support from Health Canada, Provincial Health Services Authority and an internal research grant from the University of British Columbia. The Province of BC and Vancouver Coastal Health Authority made payments to Dr. Vigo with respect to contracts for projects related to mental health service provision. The remaining authors have no conflicts of interest to report.

Supplementary materials

Supplementary material associated with this article can be found, in the online version, at [doi:10.1016/j.psychres.2025.116585](https://doi.org/10.1016/j.psychres.2025.116585).

References

- Afifi, T.O., Enns, M.W., Cox, B.J., Asmundson, G.J.G., Stein, M.B., Sareen, J., 2008. Population attributable fractions of psychiatric disorders and suicide ideation and attempts associated with adverse childhood experiences. *Am. J. Public Health* 98 (5), 946–952. <https://doi.org/10.2105/AJPH.2007.120253>.
- Alonso, J., Liu, Z., Evans-Lacko, S., Sadikova, E., Sampson, N., Chatterji, S., Abdulmalik, J., Aguilar-Gaxiola, S., Al-Hamzawi, A., Andrade, L.H., Bruffaerts, R., Cardoso, G., Cia, A., Florescu, S., de Girolamo, G., Gureje, O., Haro, J.M., He, Y., de Jonge, P., Karam, E.G., Kawakami, N., Kovess-Masfety, V., Lee, S., Levinson, D., Medina-Mora, M.E., Navarro-Mateu, F., Pennell, B.E., Piazza, M., Posada-Villa, J., Ten Have, M., Zarkov, Z., Kessler, R.C., Thornicroft, G., 2018. Treatment gap for anxiety disorders is global: results of the World Mental Health Surveys in 21 countries. *Depress. Anxiety* 35 (3), 195–208. <https://doi.org/10.1002/da.22711>.
- Alonso, J., Mortier, P., Auerbach, R.P., Bruffaerts, R., Vilagut, G., Cuijpers, P., Demyttenaere, K., Ebert, D.D., Ennis, E., Gutiérrez-García, R.A., Green, J.G., Hasking, P., Lochner, C., Nock, M.K., Pinder-Amaker, S., Sampson, N.A., Zaslavsky, A.M., Kessler, R.C., Collaborators, W.W.-I., 2018. Severe role impairment associated with mental disorders: results of the WHO World Mental Health Surveys International College Student Project. *Depress. Anxiety* 35 (9), 802–814. <https://doi.org/10.1002/da.22778>.
- Amaya, A., Presser, S., 2016. Nonresponse bias for univariate and multivariate estimates of social activities and roles. *Public Opin. Q.* 81 (1), 1–36. <https://doi.org/10.1093/poq/nfw037>.
- Auerbach, R.P., Mortier, P., Bruffaerts, R., Alonso, J., Benjet, C., Cuijpers, P., Demyttenaere, K., Ebert, D.D., Green, J.G., Hasking, P., Murray, E., Nock, M.K., Pinder-Amaker, S., Sampson, N.A., Stein, D.J., Vilagut, G., Zaslavsky, A.M., Kessler, R.C., 2018. WHO World Mental Health Surveys International College Student Project: prevalence and distribution of mental disorders. *J. Abnorm. Psychol.* 127 (7), 623–638. <https://doi.org/10.1037/abn0000362>.
- Babor, T.F., Higgins-Biddle, J.C., Saunders, J.B., Monteiro, M.G., 2001. *The alcohol use disorders identification test: guidelines for use in primary health care*. World Health Organization.
- Ballard, E.D., Cui, L., Vandeleur, C., Castela, E., Zarate Jr., C.A., Preisig, M., Merikangas, K.R., 2019. Familial aggregation and coaggregation of suicide attempts and comorbid mental disorders in adults. *JAMA Psychiatry* 76 (8), 826–833. <https://doi.org/10.1001/jamapsychiatry.2019.0248>.
- Bellis, M.A., Hughes, K., Ford, K., Ramos Rodriguez, G., Sethi, D., Passmore, J., 2019. Life course health consequences and associated annual costs of adverse childhood experiences across Europe and North America: a systematic review and meta-analysis. *Lancet Public Health* 4 (10), e517–e528. [https://doi.org/10.1016/s2468-2667\(19\)30145-8](https://doi.org/10.1016/s2468-2667(19)30145-8).
- Benjet, C., 2010. Childhood adversities of populations living in low-income countries: prevalence, characteristics, and mental health consequences. *Curr. Opin. Psychiatry* 23 (4). <https://doi.org/10.1097/YCO.0b013e32833ad79b>.
- Bernstein, D.P., Stein, J.A., Newcomb, M.D., Walker, E., Pogge, D., Ahluwalia, T., Stokes, E., Handelsman, L., Medrano, M., Desmond, D., 2003. Development and validation of a brief screening version of the Childhood Trauma Questionnaire. *Child Abuse Negl.* 27 (2), 169–190. [https://doi.org/10.1016/S0145-2134\(02\)00541-0](https://doi.org/10.1016/S0145-2134(02)00541-0).
- Breslin, F.J., Kerr, K.L., Ratliff, E.L., Cohen, Z.P., Simmons, W.K., Morris, A.S., Croff, J. M., 2024. Early life adversity predicts reduced hippocampal volume in the Adolescent Brain Cognitive Development Study. *J. Adolesc. Health* 75 (2), 275–280. <https://doi.org/10.1016/j.jadohealth.2024.04.003>.
- Bruffaerts, R., Mortier, P., Auerbach, R.P., Alonso, J., Hermsillo De la Torre, A.E., Cuijpers, P., Demyttenaere, K., Ebert, D.D., Green, J.G., Hasking, P., Stein, D.J., Ennis, E., Nock, M.K., Pinder-Amaker, S., Sampson, N.A., Vilagut, G., Zaslavsky, A. M., Kessler, R.C., WHO WMH-ICS Collaborators, 2019. Lifetime and 12-month treatment for mental disorders and suicidal thoughts and behaviors among first year college students. *Int. J. Methods Psychiatr. Res.* 28 (2), e1764. <https://doi.org/10.1002/mp.1764>.
- Chapman, D.P., Whitfield, C.L., Felitti, V.J., Dube, S.R., Edwards, V.J., Anda, R.F., 2004. Adverse childhood experiences and the risk of depressive disorders in adulthood. *J. Affect. Disord.* 82 (2), 217–225. <https://doi.org/10.1016/j.jad.2003.12.013>.
- Chen, W., Qian, L., Shi, J., Franklin, M., 2018. Comparing performance between log-binomial and robust Poisson regression models for estimating risk ratios under model misspecification. *BMC Med. Res. Methodol.* 18 (1), 63. <https://doi.org/10.1186/s12874-018-0519-5>.

- Chen, Y., Aitken, Z., Hammond, D., Thompson, A., Marwaha, S., Davey, C., Berk, M., McGorry, P., Chanan, A., Nelson, B., Ratheesh, A., 2025. Adverse childhood experiences and their differential relationships with transdiagnostic mental health outcomes in young adults. *Psychol. Med.* 55, e147. <https://doi.org/10.1017/S0033291725000893>.
- Colich, N.L., Rosen, M.L., Williams, E.S., McLaughlin, K.A., 2020. Biological aging in childhood and adolescence following experiences of threat and deprivation: a systematic review and meta-analysis. *Psychol. Bull.* 146 (9), 721–764. <https://doi.org/10.1037/bul0000270>.
- Cronholm, P.F., Forke, C.M., Wade, R., Bair-Merritt, M.H., Davis, M., Harkins-Schwarz, M., Pachter, L.M., Fein, J.A., 2015. Adverse childhood experiences: expanding the concept of adversity. *Am. J. Prev. Med.* 49 (3), 354–361. <https://doi.org/10.1016/j.amepre.2015.02.001>.
- Cuijpers, P., Smit, F., Unger, F., Stikkelbroek, Y., ten Have, M., de Graaf, R., 2011. The disease burden of childhood adversities in adults: a population-based study. *Child Abuse Negl.* 35 (11), 937–945. <https://doi.org/10.1016/j.chiabu.2011.06.005>.
- Danese, A., McEwen, B.S., 2012. Adverse childhood experiences, allostasis, allostatic load, and age-related disease. *Physiol. Behav.* 106 (1), 29–39. <https://doi.org/10.1016/j.physbeh.2011.08.019>.
- Dong, M., Anda, R.F., Felitti, V.J., Dube, S.R., Williamson, D.F., Thompson, T.J., Loo, C. M., Giles, W.H., 2004. The interrelatedness of multiple forms of childhood abuse, neglect, and household dysfunction. *Child Abuse Negl.* 28 (7), 771–784. <https://doi.org/10.1016/j.chiabu.2004.01.008>.
- Doretto, V.F., Salto, A.B.R., Schivoletto, S., Zugman, A., Oliveira, M.C., Brañas, M., Croci, M., Ito, L.T., Santoro, M., Jackowski, A.P., Bressan, R.A., Rohde, L.A., Salum, G., Miguel, E.C., Pan, P.M., 2024. Childhood maltreatment and the structural development of hippocampus across childhood and adolescence. *Psychol. Med.* 54 (16), 4528–4536. <https://doi.org/10.1017/S0033291724001636>.
- Ebert, D.D., Mortier, P., Kaehlke, F., Bruffaerts, R., Baumeister, H., Auerbach, R.P., Alonso, J., Vilagut, G., Martínez, K.I., Lochner, C., Cuijpers, P., Kuehler, A.-M., Green, J., Hasking, P., Lapsley, C., Sampson, N.A., Kessler, R.C., WHO WMH-ICS Collaborators, 2019. Barriers of mental health treatment utilization among first-year college students: first cross-national results from the WHO World Mental Health International College Student Initiative. *Int. J. Methods Psychiatr. Res.* 28 (2), e1782. <https://doi.org/10.1002/mpr.1782>.
- Felitti, V.J., Anda, R.F., Nordenberg, D., Williamson, D.F., Spitz, A.M., Edwards, V., Koss, M.P., Marks, J.S., 1998. Relationship of childhood abuse and household dysfunction to many of the leading causes of death in adults: the Adverse Childhood Experiences (ACE) study. *Am. J. Prev. Med.* 14 (4), 245–258. [https://doi.org/10.1016/S0749-3797\(98\)00017-8](https://doi.org/10.1016/S0749-3797(98)00017-8).
- Fenton, M.C., Keyes, K., Geier, T., Greenstein, E., Skodol, A., Krueger, B., Grant, B.F., Hasin, D.S., 2012. Psychiatric comorbidity and the persistence of drug use disorders in the United States. *Addiction* 107 (3), 599–609. <https://doi.org/10.1111/j.1360-0443.2011.03638.x>.
- Finkelhor, D., Ormrod, R.K., Turner, H.A., 2007. Polyvictimization and trauma in a national longitudinal cohort. *Dev. Psychopathol.* 19 (1), 149–166. <https://doi.org/10.1017/S09545794070070083>.
- Finkelhor, D., Shattuck, A., Turner, H., Hamby, S., 2013. Improving the adverse childhood experiences study scale. *JAMA Pediatr.* 167 (1), 70–75. <https://doi.org/10.1001/jamapediatrics.2013.420>.
- Finkelhor, D., Turner, H.A., Shattuck, A., Hamby, S.L., 2015. Prevalence of childhood exposure to violence, crime, and abuse: results from the National Survey of Children's Exposure to Violence. *JAMA Pediatr.* 169 (8), 746–754. <https://doi.org/10.1001/jamapediatrics.2015.0676>.
- Georgescu, T., Nedelcea, C., Gorbănescu, A., Papasteri, C., Cosmoiu, A.M., Vasile, D.L., Letzner, R.D., 2024. Psychometric evaluation of the PCL-5: assessing validity, diagnostic utility, and bifactor structures. *Eur. J. Psychotraumatol.* 15 (1), 2333222. <https://doi.org/10.1080/2008066.2024.2333222>.
- Green, J.G., McLaughlin, K.A., Berglund, P.A., Gruber, M.J., Sampson, N.A., Zaslavsky, A.M., Kessler, R., 2010. Childhood adversities and adult psychiatric disorders in the national comorbidity survey replication I: associations with first onset of DSM-IV disorders. *Arch. Gen. Psychiatry* 67 (2), 113–123. <https://doi.org/10.1001/archgenpsychiatry.2009.186>.
- Greenland, S., Drescher, K., 1993. Maximum likelihood estimation of the attributable fraction from logistic models. *Biometrics* 49 (3), 865–872.
- Grummitt, L., Baldwin, J.R., Lafaoui, J., Keyes, K.M., Barrett, E.L., 2024. Burden of mental disorders and suicide attributable to childhood maltreatment. *JAMA Psychiatry* 81 (8), 782–788. <https://doi.org/10.1001/jamapsychiatry.2024.0804>.
- Haidt, T.K., Hedderich, D.M., Rosen, M., Kaiser, N., Seves, M., Lichtenstein, T., Penzel, N., Wenzel, J., Kambeitz-Illankovic, L., Ruef, A., Popovic, D., Schultze-Lutter, F., Chisholm, K., Uthegrove, R., Salokangas, R.K.R., Pantelis, C., Meisenzahl, E., Wood, S.J., Brambilla, P., Ruhrwardt, S., Ruhrmann, S., Kambeitz, J., Koutsouleris, N., 2021. The non-specific nature of mental health and structural brain outcomes following childhood trauma. *Psychol. Med.* 1–10. <https://doi.org/10.1017/S0033291721002439>.
- Hansen, M., Vaegter, H.B., Ravn, S.L., Andersen, T.E., 2023. Validation of the Danish PTSD Checklist for DSM-5 in trauma-exposed chronic pain patients using the clinician-administered PTSD Scale for DSM-5. *Eur. J. Psychotraumatol.* 14 (1), 2179801. <https://doi.org/10.1080/2008066.2023.2179801>.
- Harkness, J., Pennell, B.E., Villar, A., Gebler, N., Aguilar-Gaxiola, S., Bilgen, I., 2008. Translation procedures and translation assessment in the World Mental Health Survey Initiative. In: Kessler, R.C., Ustun, T.B. (Eds.), *The WHO World Mental Health Surveys: Global Perspectives on the Epidemiology of Mental Disorders*. World Health Organization, pp. 91–113.
- Higgins, D.J., Mathews, B., Pacella, R., Scott, J.G., Finkelhor, D., Meinck, F., Erskine, H. E., Thomas, H.J., Lawrence, D.M., Haslam, D.M., Malacova, E., Dunne, M.P., 2023. The prevalence and nature of multi-type child maltreatment in Australia. *Med. J. Aust.* 218 (Suppl 6), S19–S25. <https://doi.org/10.5694/mja2.51868>.
- Hillis, S., Mercy, J., Amobi, A., Kress, H., 2016. Global prevalence of past-year violence against children: a systematic review and minimum estimates. *Pediatrics* 137 (3), e20154079. <https://doi.org/10.1542/peds.2015-4079>.
- Horwitz, A.G., McGuire, T., Busby, D.R., Eisenberg, D., Zheng, K., Pistorello, J., Albuher, R., Coryell, W., King, C.A., 2020. Sociodemographic differences in barriers to mental health care among college students at elevated suicide risk. *J. Affect. Disord.* 271, 123–130. <https://doi.org/10.1016/j.jad.2020.03.115>.
- Hovenkamp-Hermelink, J.H.M., Jeronimus, B.F., Myroniuk, S., Riese, H., Schoevers, R. A., 2021. Predictors of persistence of anxiety disorders across the lifespan: a systematic review. *Lancet Psychiatry* 8 (5), 428–443. [https://doi.org/10.1016/S2215-0366\(20\)30433-8](https://doi.org/10.1016/S2215-0366(20)30433-8).
- Hughes, K., Bellis, M.A., Hardcastle, K.A., Sethi, D., Butchart, A., Mikton, C., Jones, L., Dunne, M.P., 2017. The effect of multiple adverse childhood experiences on health: a systematic review and meta-analysis. *Lancet Public Health* 2 (8), e356–e366. [https://doi.org/10.1016/S2468-2667\(17\)30118-4](https://doi.org/10.1016/S2468-2667(17)30118-4).
- Husky, M.M., Sadikova, E., Lee, S., Alonso, J., Auerbach, R.P., Bantjes, J., Bruffaerts, R., Cuijpers, P., Ebert, D.D., Garcia, R.G., Hasking, P., Mak, A., McLafferty, M., Sampson, N.A., Stein, D.J., Kessler, R.C., 2023. Childhood adversities and mental disorders in first-year college students: results from the World Mental Health International College Student Initiative. *Psychol. Med.* 53 (7), 2963–2973. <https://doi.org/10.1017/S0033291721004980>.
- Jeong, J., Franchett, E.E., Ramos de Oliveira, C.V., Rehmani, K., Yousafzai, A.K., 2021. Parenting interventions to promote early child development in the first three years of life: a global systematic review and meta-analysis. *PLoS Med.* 18 (5), e1003602. <https://doi.org/10.1371/journal.pmed.1003602>.
- Kessler, R., McLaughlin, K.A., Green, J.G., Gruber, M.J., Sampson, N.A., Zaslavsky, A.M., Aguilar-Gaxiola, S., Alhamzawi, A.O., Alonso, J., Angermeyer, M., 2010. Childhood adversities and adult psychopathology in the WHO World Mental Health Surveys. *Br. J. Psychiatry* 197 (5), 378–385. <https://doi.org/10.1192/bjp.bp.110.080499>.
- Kessler, R.C., Adler, L., Ames, M., Demler, O., Faraone, S., Hiripi, E.V.A., Howes, M.J., Jin, R., Secnik, K., Spencer, T., Ustun, T.B., Walters, E.E., 2005. The World Health Organization Adult ADHD Self-Report Scale (ASRS): a short screening scale for use in the general population. *Psychol. Med.* 35 (2), 245–256. <https://doi.org/10.1017/S0033291704002892>.
- Kessler, R.C., Adler, L.A., Gruber, M.J., Sarawate, C.A., Spencer, T., Van Brunt, D.L., 2007. Validity of the World Health Organization Adult ADHD Self-Report Scale (ASRS) Screener in a representative sample of health plan members. *Int. J. Methods Psychiatr. Res.* 16 (2), 52–65. <https://doi.org/10.1002/mpr.208>.
- Kessler, R.C., Calabrese, J.R., Farley, P.A., Gruber, M.J., Jewell, M.A., Katon, W., Keck, P. E., Nierenberg, A.A., Sampson, N.A., Shear, M.K., Shillington, A.C., Stein, M.B., Thase, M.E., Wittchen, H.U., 2013. Composite International Diagnostic Interview screening scales for DSM-IV anxiety and mood disorders. *Psychol. Med.* 43 (8), 1625–1637. <https://doi.org/10.1017/S003329172002334>.
- Kessler, R.C., Davis, C.G., Kendler, K.S., 1997. Childhood adversity and adult psychiatric disorder in the US National Comorbidity Survey. *Psychol. Med.* 27 (5), 1101–1119. <https://doi.org/10.1017/S0033291797005588>.
- Kessler, R.C., McLaughlin, K.A., Green, J.G., Gruber, M.J., Sampson, N.A., Zaslavsky, A. M., Aguilar-Gaxiola, S., Alhamzawi, A.O., Alonso, J., Angermeyer, M., Benjet, C., Bromet, E., Chatterji, S., de Girolamo, G., Demyttenaere, K., Fayyad, J., Florescu, S., Gal, G., Gureje, O., Haro, J.M., Hu, C.-y., Karam, E.G., Kawakami, N., Lee, S., Lépine, J.-P., Ormel, J., Posada-Villa, J., Sagar, R., Tsang, A., Üstün, T.B., Vassilev, S., Viana, M.C., Williams, D.R., 2010. Childhood adversities and adult psychopathology in the WHO World Mental Health Surveys. *Br. J. Psychiatry* 197 (5), 378–385. <https://doi.org/10.1192/bjp.bp.110.080499>.
- Kessler, R.C., Santiago, P.N., Colpe, L.J., Dempsey, C.L., First, M.B., Heeringa, S.G., Stein, M.B., Fullerton, C.S., Gruber, M.J., Naifeh, J.A., Nock, M.K., Sampson, N.A., Schoenbaum, M., Zaslavsky, A.M., Ursano, R.J., 2013. Clinical reappraisal of the Composite International Diagnostic Interview Screening Scales (CIDI-SC) in the Army Study to Assess Risk and Resilience in Servicemembers (Army STARRS). *Int. J. Methods Psychiatr. Res.* 22 (4), 303–321. <https://doi.org/10.1002/mpr.1398>.
- Khaled, S.M., Al-Thani, S.M., Sampson, N.A., Kessler, R.C., Woodruff, P.W., Alabdulla, M., 2024. Twelve-month prevalence, persistence, severity, and treatment of mood and anxiety disorders in Qatar's national mental health study. *Int. J. Methods Psychiatr. Res.* 33 (S1), e2012. <https://doi.org/10.1002/mpr.2012>.
- Kramer, L.B., Whiteman, S.E., Petri, J.M., Spitzer, E.G., Weathers, F.W., 2023. Self-rated versus clinician-rated assessment of posttraumatic stress disorder: an evaluation of discrepancies between the PTSD checklist for DSM-5 and the clinician-administered PTSD scale for DSM-5. *Assess* 30 (5), 1590–1605. <https://doi.org/10.1177/1073191122113571>.
- Lindert, J., von Ehrenstein, O.S., Grashow, R., Gal, G., Braehler, E., Weisskopf, M.G., 2014. Sexual and physical abuse in childhood is associated with depression and anxiety over the life course: systematic review and meta-analysis. *Int. J. Public Health* 59 (2), 359–372. <https://doi.org/10.1007/s00038-013-0519-5>.
- Lippard, E.T.C., Nemeroff, C.B., 2020. The devastating clinical consequences of child abuse and neglect: increased disease vulnerability and poor treatment response in mood disorders. *Am. J. Psychiatry* 177 (1), 20–36. <https://doi.org/10.1176/appi.ajp.2019.19010020>.
- Madigan, S., Deneault, A.A., Racine, N., Park, J., Thiemann, R., Zhu, J., Dimitropoulos, G., Williamson, T., Fearon, P., Cénat, J.M., McDonald, S., Devereux, C., Neville, R.D., 2023. Adverse childhood experiences: a meta-analysis of prevalence and moderators among half a million adults in 206 studies. *World Psychiatry* 22 (3), 463–471. <https://doi.org/10.1002/wps.21122>.
- Madigan, S., Thiemann, R., Deneault, A.-A., Fearon, R.M.P., Racine, N., Park, J., Lunney, C.A., Dimitropoulos, G., Jenkins, S., Williamson, T., Neville, R.D., 2025.

- Prevalence of adverse childhood experiences in child population samples: a systematic review and meta-analysis. *JAMA Pediatr.* 179 (1), 19–33. <https://doi.org/10.1001/jamapediatrics.2024.4385>.
- Mason, A., Rapsey, C., Sampson, N., Lee, S., Albor, Y., Al-Hadi, A.N., Alonso, J., Al-Saud, N., Altwajri, Y., Andersson, C., Atwoli, L., Auerbach, R.P., Ayuya, C., Băez-Mansur, P.M., Ballester, L., Bantjes, J., Baumeister, H., Bendtsen, M., Benjet, C., Berman, A.H., Bootsma, E., Chan, S.C.N., Cohut, I., Covarrubias Díaz Couder, M.A., Cuijpers, P., David, O., Dong, D., Ebert, D.D., Nobrega, M.F., Gaete, J., Forero, C.G., Gili, M., Gutiérrez-García, R., Haro, J.M., Hasking, P., Hudec, K., Hunt, X., Hurks, P., Husky, M., Jaguga, F., Jansen, L., Kähle, F., Klinkenberg, E., Küchler, A.-M., Langer, Á.I., Léniz, I., Liu, Y., Mac-Ginty, S., Martínez, V., Mathai, M., McLafferty, M., Miranda-Mendizabal, A., Murray, E., Musyoka, C.M., Nedelcea, C., Ngai, C.H., Núñez, D., O'Neill, S., Piqueras, J.A., Popescu, C.A., Robinson, K., Rodríguez-Jimenez, T., Scarf, D., Siu, O.L., Stein, D.J., Struijs, S.Y., Tomoiaga, C., Valdés-García, K.P., van Luenen, S., Vigo, D.V., Wang, A.Y., Wiers, R., Wong, S.Y.S., Kessler, R.C., Bruffaerts, R., Lima, R.A., Breet, E., Garnefski, N., Jacobs, K., Kraaij, V., Munro, L., Munthali, R.J., Prescivalli, A.P., Rebagliato, M., Roca, M., Saleminck, E., van der Heijde, C., 2025. Prevalence, age-of-onset, and course of mental disorders among 72,288 first-year university students from 18 countries in the World Mental Health International College Student (WMH-ICS) initiative. *J. Psychiatr. Res.* 183, 225–236. <https://doi.org/10.1016/j.jpsychires.2025.02.016>.
- Mathews, B., Pacella, R., Scott, J.G., Finkelhor, D., Meinck, F., Higgins, D.J., Erskine, H. E., Thomas, H.J., Lawrence, D.M., Haslam, D.M., Malacova, E., Dunne, M.P., 2023. The prevalence of child maltreatment in Australia: findings from a national survey. *Med. J. Aust.* 218 (Suppl 6), s13–s18. <https://doi.org/10.5694/mja2.51873>.
- McKay, M.T., Kilmartin, L., Meagher, A., Cannon, M., Healy, C., Clarke, M.C., 2022. A revised and extended systematic review and meta-analysis of the relationship between childhood adversity and adult psychiatric disorder. *J. Psychiatr. Res.* 156, 268–283. <https://doi.org/10.1016/j.jpsychires.2022.10.015>.
- McLaughlin, K.A., Green, J.G., Gruber, M.J., Sampson, N.A., Zaslavsky, A.M., Kessler, R. C., 2010. Childhood adversities and adult psychiatric disorders in the National Comorbidity Survey Replication II: associations with persistence of DSM-IV disorders. *Arch. Gen. Psychiatry* 67 (2), 124–132. <https://doi.org/10.1001/archgenpsychiatry.2009.187>.
- McLaughlin, K.A., Weissman, D., Bitrán, D., 2019. Childhood adversity and neural development: a systematic review. *Annu. Rev. Dev. Psychol.* 1, 277–312. <https://doi.org/10.1146/annurev-devpsych-121318-084950>.
- Merikangas, K.R., Cui, L., Heaton, L., Nakamura, E., Roca, C., Ding, J., Qin, H., Guo, W., Shugart, Y.Y., Zarate, C., Angst, J., 2014. Independence of familial transmission of mania and depression: results of the NIMH family study of affective spectrum disorders. *Mol. Psychiatry* 19 (2), 214–219. <https://doi.org/10.1038/mp.2013.116>.
- Merrick, M.T., Ford, D.C., Ports, K.A., Guinn, A.S., 2018. Prevalence of adverse childhood experiences from the 2011–2014 behavioral risk factor surveillance system in 23 states. *JAMA Pediatr.* 172 (11), 1038–1044. <https://doi.org/10.1001/jamapediatrics.2018.2537>.
- Núñez, D., Gaete, J., Guajardo, V., Libuy, N., Araneda, A.M., Contreras, L., Donoso, P., Ibañez, C., Mundt, A.P., 2024. Brief Report: The association of adverse childhood experiences and suicide-related behaviors among 10th-grade secondary school students. *Arch. Suicide Res.* 28 (1), 399–410. <https://doi.org/10.1080/13811118.2022.2134067>.
- Radford, L., Corral, S., Bradley, C., Fisher, H.L., 2013. The prevalence and impact of child maltreatment and other types of victimization in the UK: findings from a population survey of caregivers, children and young people and young adults. *Child Abuse Negl.* 37 (10), 801–813. <https://doi.org/10.1016/j.chiabu.2013.02.004>.
- Raghunathan, T.E., Grizzle, J.E., 1995. A split questionnaire survey design. *J. Am. Stat. Assoc.* 90 (429), 54–63. <https://doi.org/10.1080/01621459.1995.10476488>.
- Scott, J.G., Malacova, E., Mathews, B., Haslam, D.M., Pacella, R., Higgins, D.J., Meinck, F., Dunne, M.P., Finkelhor, D., Erskine, H.E., Lawrence, D.M., Thomas, H.J., 2023. The association between child maltreatment and mental disorders in the Australian Child Maltreatment Study. *Med. J. Aust.* 218 (Suppl 6), s26–s33. <https://doi.org/10.5694/mja2.51870>.
- Spijker, J., de Graaf, R., Bijl, R.V., Beekman, A.T., Ormel, J., Nolen, W.A., 2004. Determinants of persistence of major depressive episodes in the general population. Results from the Netherlands Mental Health Survey and Incidence Study (NEMESIS). *J. Affect. Disord.* 81 (3), 231–240. <https://doi.org/10.1016/j.jad.2003.08.005>.
- Stoltenborgh, M., Bakermans-Kranenburg, M.J., Alink, L.R.A., van Ijzendoorn, M.H., 2012. The universality of childhood emotional abuse: a meta-analysis of worldwide prevalence. *J. Aggress. Maltreatment Trauma* 21 (8), 870–880. <https://doi.org/10.1080/10926771.2012.708014>.
- Stoltenborgh, M., Bakermans-Kranenburg, M.J., van Ijzendoorn, M.H., 2013. The neglect of child neglect: a meta-analytic review of the prevalence of neglect. *Soc. Psychiatry Psychiatr. Epidemiol.* 48 (3), 345–355. <https://doi.org/10.1007/s00127-012-0549-y>.
- Stoltenborgh, M., Bakermans-Kranenburg, M.J., van Ijzendoorn, M.H., Alink, L.R., 2013. Cultural-geographical differences in the occurrence of child physical abuse? A meta-analysis of global prevalence. *Int. J. Psychol.* 48 (2), 81–94. <https://doi.org/10.1080/00207594.2012.697165>.
- Stoltenborgh, M., van Ijzendoorn, M.H., Euser, E.M., Bakermans-Kranenburg, M.J., 2011. A global perspective on child sexual abuse: meta-analysis of prevalence around the world. *Child Maltreatment* 16 (2), 79–101. <https://doi.org/10.1177/1077559511403920>.
- Toffol, E., Stracke, M., Harlos, N., Lambrecht, S., Brandt, F., Friedrich, S., Kennard, S., Wenzel, L., de Girolamo, G., Gilbert, K., Reck, C., Otto, K., Steinmayr, R., Renneberg, B., Paul, J.L., Thorup, A.A.E., Schwenck, C., Zietlow, A.-L., Wirthwein, L., Christiansen, H., 2024. Lessons on targeting family mental health and improving outcomes for children of parents with a mental illness. *Nat. Ment. Health* 2 (8), 893–900. <https://doi.org/10.1038/s44220-024-00285-3>.
- Toner, P., Böhnke, J.R., Andersen, P., McCambridge, J., 2019. Alcohol screening and assessment measures for young people: a systematic review and meta-analysis of validation studies. *Drug Alcohol Depend.* 202, 39–49. <https://doi.org/10.1016/j.drugalcdep.2019.01.030>.
- Vachon, D.D., Krueger, R.F., Rogosch, F.A., Cicchetti, D., 2015. Assessment of the harmful psychiatric and behavioral effects of different forms of child maltreatment. *JAMA Psychiatry* 72 (11), 1135–1142. <https://doi.org/10.1001/jamapsychiatry.2015.1792>.
- Van Buuren, S., 2012. Flexible imputation of missing data, First Edition ed. CRC press. <https://doi.org/10.1201/b11826>.
- Villars-Hurlocker, M.C., Schutts, J.W., Madson, M.B., Jordan, H.R., Whitley, R.B., Mohn, R.C., 2020. Screening for alcohol use disorders in college student drinkers with the AUDIT and the USAUDIT: a receiver operating characteristic curve analysis. *Am. J. Drug Alcohol Abuse* 46 (5), 531–545. <https://doi.org/10.1080/00952990.2020.1712410>.
- Weathers, F.W., Litz, B.T., Keane, T.M., Palmieri, P.A., Marx, B.P., Schnurr, P.P., 2013. The PTSD checklist for DSM-5 (PCL-5). the National Center for PTSD, p. 10. Scale available fromat. www.ptsd.va.gov.
- World Health Organization, 2016. INSPIRE: Seven strategies for ending violence against children. <https://www.who.int/publications/i/item/inspire-seven-strategies-for-ending-violence-against-children>.
- Ziobrowski, H.N., Adler, L.A., Zainal, N.H., Anbarasan, D., Sampson, N.A., Puac-Polanco, V., Kessler, R.C., 2023. In: Krägeloh, C.U., Alyami, M., Medvedev, O.N. (Eds.), *Adult Attention-Deficit/Hyperactivity Disorder Self-Report Scale (ASRS)*. International Handbook of Behavioral Health Assessment, pp. 1–32.
- Zurowski, K.L., Ustun, B., Hwang, I., Keane, T.M., Marx, B.P., Stein, M.B., Ursano, R.J., Kessler, R.C., 2019. Developing an optimal short-form of the PTSD Checklist for DSM-5 (PCL-5). *Depress. Anxiety* 36 (9), 790–800. <https://doi.org/10.1002/da.22942>.