

Trauma, PTSD, and Complex PTSD in the Republic of Ireland: Prevalence, service use,
comorbidity, and risk factors

Running head: Trauma and trauma disorders in Ireland

Philip Hyland, PhD

Department of Psychology, Maynooth University, Kildare, Ireland
Trinity Centre for Global Health, University of Dublin, Trinity College, Dublin, Ireland.
Philip.hyland@mu.ie

Frédérique Vallières, PhD

Trinity Centre for Global Health, University of Dublin, Trinity College, Dublin, Ireland.
fvallier@tcd.ie

Marylène Cloitre, PhD

National Center for PTSD Dissemination and Training Division, VA Palo Alto Health Care
System, Palo Alto, CA USA; Department of Psychiatry and Behavioural Sciences, Stanford
University, Stanford, CA, USA.
Marylene.cloitre@va.gov

Menachem Ben-Ezra, PhD

School of Social Work, Ariel University, Ariel, Israel
menbe@ariel.ac.il

Thanos Karatzias, PhD

Edinburgh Napier University, School of Health & Social Care, Edinburgh, UK
NHS Lothian, Rivers Centre for Traumatic Stress, Edinburgh, UK
t.karatzias@napier.ac.uk

Miranda Olf, PhD

Department of Psychiatry Amsterdam University Medical Centers–Academic Medical
Center, University of Amsterdam, Amsterdam, the Netherlands.
Arq Psychotrauma Expert Group, Diemen, the Netherlands.
m.olf@amc.uva.nl

Jamie Murphy, PhD

School of Psychology, Ulster University, Derry, Northern Ireland
ja.murphy@ulster.ac.uk

Mark Shevlin, PhD

School of Psychology, Ulster University, Derry, Northern Ireland
m.shevlin@ulster.ac.uk

Word count: 4685

Tables: 3

Corresponding Author: Philip Hyland, Department of Psychology, Maynooth University, Kildare, Ireland. Philip.hyland@mu.ie

Contributors

All authors contributed to the conceptual and analytical design of this study. PH, FV, JM, and MS conducted the statistical analyses. PH and FV wrote the first draft of the manuscript. All authors contributed to writing the final version of the manuscript.

Declaration of interests

Marylène Cloitre participated as a member of the World Health Organization Working Group on the Classification of Disorders Specifically Associated with Stress, reporting to the International Advisory Group for the Revision of ICD-10 Mental and Behavioural Disorders. However, the views expressed reflect the opinions of the authors and not necessarily the Working Group or Advisory Group and the content of this article does not represent WHO policy.

Data Sharing Statement

The data that support the findings of this study are available from the corresponding author upon reasonable request.

Abstract

Purpose: This study represents the first assessment of the prevalence of trauma exposure, and Posttraumatic Stress Disorder (PTSD) and Complex PTSD (CPTSD), ever conducted in the general population of the Republic of Ireland. Additionally, prevalence of past-year mental health service use, comorbidity with major depression and generalized anxiety, and risk factors associated with PTSD and CPTSD were assessed.

Methods: A nationally representative sample of non-institutionalized Irish adults ($N = 1,020$) completed self-report measures of trauma history, trauma-related psychopathology, mental health service use, and concurrent mental health problems.

Results: Lifetime exposure to one or more traumatic events was 82.3%, and 67.8% reported experiencing two or more traumatic events. Males and females significantly differed in their frequency of exposure to eight of 16 traumatic events. The past-month prevalence for PTSD was 5.0% (95% CI = 3.7%, 6.3%) and 7.7% (95% CI = 6.1%, 9.4%) for CPTSD. Of those who screened positive for PTSD or CPTSD, 48.6% accessed mental health care in the past year. Comorbidity with major depression and generalized anxiety was high, especially among those with CPTSD. Several unique and shared risk factors for PTSD and CPTSD were identified.

Conclusions: Approximately one-in-eight Irish adults met diagnostic requirements for PTSD or CPTSD, and comorbidity with other disorders was high. History of interpersonal trauma and exposure to multiple types of trauma in different developmental periods were associated with CPTSD. Many individuals did not access mental health care revealing a substantial mental health treatment gap.

Key words: Trauma; Posttraumatic stress disorder (PTSD); Complex PTSD (PTSD); risk factors; service use.

Introduction

In a 24 country study, the World Health Organization's (WHO) 'World Mental Health Survey' (WMHS) found that 70.4% of people had experienced at least one traumatic life event, 52.3% have experienced two or more traumatic life events, and the mean number of different lifetime traumatic exposures was 3.2 [1]. Furthermore, across 26 countries, the average lifetime prevalence of Posttraumatic Stress Disorder (PTSD) – diagnosed in accordance with the fourth edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV) [2] – was 3.9%, and Northern Ireland had the highest level at 8.8% [3]. The WMHS project leaders noted, however, that these levels of trauma-exposure and PTSD were likely to be conservative estimates due to the fact that they were derived from fully structured lay-administered diagnostic interviews [4].

The Republic of Ireland (henceforth referred to as Ireland) was not part of the WMHS project, and no study has ever been undertaken to determine the epidemiology of trauma-exposure and trauma-related psychopathology in the Irish population. There are, however, reasons to suspect that trauma-related psychopathology may be common in Ireland. Because of its geographical proximity to Northern Ireland many Irish people have been directly or indirectly exposed to the sectarian violence that occurred in Northern Ireland from 1968-1998 (the conflict known as 'The Troubles'). Moreover, widely documented clerical and institutional abuses affected a large (but undeterminable) number of people in Ireland for decades until the late 1990s [5]. An additional datum that suggests that mental health disorders may be relatively high in Ireland comes from the OECD's 2014 'European Health Interview Survey' [6]. Across 26 European countries, Ireland had the fourth highest level of past-year, self-reported depression at 12.1%, considerably higher than the European average of 7.9%.

In 2018, the WHO published the 11th version of the International Classification of Diseases (ICD-11) [7]. This marked an important development in the field of psychotraumatology because ICD-11 presented a refined description of PTSD and introduced Complex PTSD (CPTSD) into the diagnostic nomenclature. Unlike the broad-based description of PTSD in ICD-10 [8] and DSM-5 [9], ICD-11 redefined PTSD in terms of six ‘core’ symptoms distributed across three clusters (‘Re-experiencing in the here and now’, ‘Avoidance’, and ‘Sense of Threat’). CPTSD is a related but distinct diagnosis comprised of the core PTSD symptoms plus six additional symptoms distributed across three clusters (‘Affective Dysregulation’, ‘Negative Self-Concept’, and ‘Disturbed Relationships’). These latter symptom clusters are labelled ‘Disturbances in Self-Organization’ (DSO). Considerable evidence has accrued in recent years supporting the construct validity of ICD-11 PTSD and CPTSD [10, 11].

Several studies utilizing nationally representative samples and self-report assessment methods have estimated the current (i.e., past-month) prevalence of ICD-11 PTSD and CPTSD. In the United States, the occurrence of PTSD (3.4%) and CPTSD (3.8%) were similar [12], while in Israel PTSD (9.0%) was more common than CPTSD (2.6%) [13]. Another study in Germany found lower prevalence of PTSD (1.5%) and CPTSD (0.5%), however these results are likely due to the use of strict trauma-exposure definition where only 21.0% of participants met this diagnostic criterion [14]. Consistent with the broader PTSD literature [15], females were significantly more likely to meet diagnostic requirements for PTSD and CPTSD in the United States, and for PTSD in Israel. The emerging data suggests that PTSD and CPTSD are common disorders in the general population, and that women are affected at higher rates than men even when adjusting for trauma history [12]. As CPTSD is a more impairing disorder than PTSD [10] and therefore likely to require additional clinical interventions for effective treatment outcomes [16], mental health resource planning will

benefit from additional data regarding the prevalence of these disorders in the general population.

This study was undertaken to fill a gap in existing knowledge regarding the lifetime prevalence of single and multiple trauma exposure, as well as the current (i.e., past month) prevalence of PTSD and CPTSD in the general adult population of Ireland. Additionally, in this study we sought to determine if there were significant sex differences in (a) the number of different traumatic life events experienced at different developmental periods (i.e., childhood, adolescence, and adulthood), (b) the types of traumas reported, and (c) the past month prevalence of PTSD and CPTSD. A number of secondary objectives were also investigated. We assessed what proportion of people meeting diagnostic requirements for PTSD and CPTSD had accessed mental health care services in the past year; the level of diagnostic comorbidity between PTSD and CPTSD and major depressive disorder and generalized anxiety disorder; and the unadjusted and adjusted associations between 14 exogenous risk factors and meeting the diagnostic requirements for PTSD and CPTSD.

Methods

Participants and procedures

This study was based on a nationally representative sample of non-institutionalised Irish adults aged 18 years and older ($N = 1,020$). The sample characteristics are reported in Table 1. Participants were recruited by a survey company called Qualtrics who maintain a nationally representative panel of participants available for survey research. In this study, participants were drawn from the panel using stratified, random probability sampling methods to construct a sample that was representative of the general adult population in terms of sex, age, and geographical distribution. These three sample characteristics match known population parameters as per the 2016 Irish census data [17].

Table 1 here

Panel members were contacted by Qualtrics via email and provided with a brief information leaflet regarding the nature of the study. Those who chose to participate completed the survey online. No information was gathered on those who chose not to participate therefore it was not possible to determine the overall participation rate. Those who chose to participate were provided with a detailed information sheet about the nature of the study including the types of questions they would be asked, the approximate length of time needed to complete the survey, a requirement to answer all questions, an assurance of anonymity, and their right to withdraw at any time. Informed consent was obtained prior to participants completing the survey. Panel members receive financial remuneration from Qualtrics for their participation. Ethical approval was provided by the Social Research Ethics Committee at Maynooth University, Ireland. The median time of completion was 22 minutes and Qualtrics employed checks to identify and remove any cases where participants completed the survey in a time that was deemed to be too fast to be confident that responses were trustworthy (i.e., less than 7 minutes). All data were collected in February 2019.

Measures

Trauma exposure

Trauma exposure was measured using a newly developed checklist called the *International Trauma Exposure Measure* [18] (ITEM: available at <https://www.traumameasuresglobal.com/item>). This checklist was designed to reflect the ICD-11's more expansive description of a traumatic event. The ITEM includes descriptions of 21 events and respondents indicate on a 'Yes' (1) or 'No' (0) basis if they experienced each one during three developmental periods: childhood ('before or during your time in primary school [up to age 12]'), adolescence ('during your time in secondary school [between ages 13-18]'), and adulthood ('after your time in secondary school [after the age of 18]'). Educational descriptors are used to help respondents more accurately identify the timing of

their traumatic event and are adaptable to reflect the cultural context in which the measure is used. Lifetime exposure to each event was indicated by a positive response during any developmental period. The first 16 events in the ITEM reflect the DSM-5 definition of trauma exposure (Table 2) and map onto existing checklists such as the Life Events Checklist (LEC-5) [19]. The final five items (measuring stalking, bullying, emotional abuse, emotional neglect, and physical neglect) do not necessarily map on to the DSM-5 criterion for traumatic exposure but do reflect the ICD-11's trauma exposure criterion. To ensure that our findings were comparable to existing data from the United States [12] and Israel [13], we only used the 16 items classified as reflecting the DSM-5 definition of trauma exposure in this study. Respondents were also asked to identify their most distressing event (i.e., their 'index trauma'), the number of times they were exposed to their index trauma, and how long ago their index trauma first occurred. Index traumas were classified as 'interpersonal' (48.6%) or 'non-interpersonal' (51.4%) (Table 2), and this classification was based on established recommendations [20, 21].

ICD-11 PTSD and CPTSD

The *International Trauma Questionnaire* (ITQ) [22] is the only available self-report measure of ICD-11 PTSD and CPTSD symptoms. It includes six items measuring each PTSD symptom and respondents indicate how much they have been bothered by each symptom during the past month. There are six items measuring each DSO symptom and respondents indicate how they typically feel, think about oneself, and relate to others. There are three items measuring functional impairment in the domains of social, occupational/educational, and other important areas of life relating to both sets of symptoms. All items use a five-point Likert scale ranging from 0 (*Not at all*) to 4 (*Extremely*), and a symptom is deemed to be present based on a response of ≥ 2 (*Moderately*) [21]. The psychometric properties of the ITQ scores have been demonstrated in multiple general population samples [12, 13], and in this

sample the internal reliability (Cronbach's alpha) of the PTSD ($\alpha = .90$), DSO ($\alpha = .93$), and total ($\alpha = .93$) scale scores were excellent.

The diagnostic requirements for PTSD include exposure to at least one traumatic event, the presence of at least one symptom from each PTSD cluster, and the presence of at least one indicator of functional impairment associated with these symptoms. Diagnosis of CPTSD requires that all of the PTSD criteria are met, and in addition that at least one symptom from each DSO cluster is present, and at least one indicator of functional impairment associated with these symptoms is endorsed. The ICD-11 diagnostic rules permit a diagnosis of PTSD or CPTSD, but not both.

Major Depression

The *Patient Health Questionnaire-9* (PHQ-9) [23] was used to measure the nine symptoms of DSM-5 major depression. Respondents indicate how often they have been bothered by each symptom over the last two weeks using a four-point Likert scale ranging from 0 (*Not at all*) to 3 (*Nearly every day*). A symptom is deemed to be present based on a score of ≥ 2 (*More than half the days*). The PHQ-9 scores have been found to have excellent psychometric properties [24], and the internal reliability of the scale scores in this sample was excellent ($\alpha = .93$). A DSM-5 diagnosis of major depression requires that five of the nine symptoms be present, with one of these symptoms being either 'diminished interest or pleasure in doing things' or 'feeling down, depressed, or hopeless'.

Generalized Anxiety Disorder (GAD)

The *Generalized Anxiety Disorder 7-item Scale* (GAD-7) [25] was used to measure GAD symptoms. The GAD-7 uses the same scoring scheme as the PHQ-9. The GAD-7 scores have been shown to have excellent psychometric properties [26], and the internal reliability of the scale scores in this sample was excellent ($\alpha = .94$). Unlike the PHQ-9, the GAD-7 does not align to the DSM-5 diagnostic criteria for GAD, however, scores ≥ 10 and \geq

15 have been shown to reflect ‘moderate’ and ‘severe’ cases of GAD, respectively [25]. In this study, we used the higher cut-off score of ≥ 15 to identify possible diagnostic cases of GAD.

Life History Questions

Participants were asked several questions about their life history including, ‘*Were you ever taken into Local Authority Care (that is into a children's home or foster care) before the age of 18?*’, ‘*When you were growing up in the first 18 years of life, was a household member depressed or mentally ill or did a household member attempt suicide?*’, and ‘*In the past 12 months, have you attended a psychotherapist, counsellor, psychiatrist, or psychologist for mental health problems?*’

Data Analysis

Descriptive statistics were used to calculate rates of single and multiple trauma exposure, as well as the past-month prevalence rates of PTSD and CPTSD. Independent samples t-tests were used to compare the mean number of different trauma life events experienced in childhood, adolescence, adulthood, and across the lifetime between males and females. Cohen’s d values were calculated to quantify the magnitude of these differences, with values < 0.5 indicating a small effect, values between 0.5 and 0.8 indicating a medium effect, and values > 0.8 indicating a large effect.

Chi-square (χ^2) tests of independence were used to determine if there were sex differences in rates of lifetime exposure to the 16 traumatic events, and the past-month prevalence rates of PTSD and CPTSD. Additionally, the χ^2 test was used to examine the association between meeting diagnostic requirements for PTSD and CPTSD and use of mental health service use in the past 12 months, as well as the comorbidities between PTSD and CPTSD and MDD and GAD.

Finally, multinomial logistic regression analysis was conducted to determine unadjusted and adjusted associations between the 14 exogenous risk factors and meeting requirements for PTSD and CPTSD. The risk factors were treated as predictor variables and diagnostic status was treated as the criterion variable (0 = No diagnosis, 1 = PTSD, 2 = CPTSD). The ‘no diagnosis’ group was set as the reference category for all comparisons. The unadjusted odds ratios (OR) were calculated by entering each predictor variable into the multinomial logistic regression individually. The adjusted ORs (AOR) were calculated by entering all predictor variables into the multinomial logistic regression simultaneously. The 14 risk factors included sex (0 = male, 1 = female), age, relationship status (0 = in a committed relationship, 1 = not in a committed relationship), educational status (0 = finished school, 1 = did not finish school), employment status (0 = employed/student/retired/homemaking, 1 = unemployed), income level (0 = at or above national annual mean income, 1 = below the national mean income), taken into local authority care before the age of 18 (0 = no, 1 = yes), growing up with a household member who had a mental illness (0 = no, 1 = yes), number of different childhood, adolescent, and adulthood traumas, number of exposures to one’s index trauma, reporting an interpersonal index trauma (0 = no, 1 = yes), and the recency of exposure to one’s index trauma (0 = more than one year ago, 1 = one year ago or less).

Full data were available for all analyses. We conducted power calculations in G*Power to ensure that all planned tests were sufficiently powered (i.e., > .80) to detect small-to-medium sized effects at an alpha level of .05 based on our pre-determined sample size.

Results

Life history

In total, 3.1% (95% CI = 2.1%, 4.2%) of respondents reported that they were taken into local authority care before the age of 18; 22.5% (95% CI = 19.9%, 25.0%) indicated that they grew up with a family member who had a mental illness or had attempted suicide; and 17.3% (95% CI = 14.9%, 19.6%) indicated that they had accessed mental health care in the past year.

Lifetime prevalence of trauma exposure

The mean number of different traumatic events experienced across the lifespan was 3.26 (*Mdn* = 3.00, *SD* = 3.18, Range = 0-16). No statistically significant differences existed between males and females in the mean number of different childhood ($t(1018) = -0.50, p = .619, d = .03$), adolescent ($t(1018) = 1.52, p = .129, d = .09$), adulthood ($t(1018) = -0.22, p = .827, d = .02$), or lifetime ($t(1018) = 0.34, p = .736, d = .02$) traumas. Regarding trauma exposure, 82.3% (95% CI = 79.9%, 84.6%) of respondents reported experiencing one or more traumatic events during their lifetime, 67.8% experienced two or more traumas, 52.7% experienced three or more traumas, and 37.0% experienced four or more traumas.

Table 2 presents the frequencies and sex differences in lifetime exposure to each traumatic event. Women were significantly *more* likely than men to have been ‘sexually harassed’ (OR = 4.20) and ‘sexually assaulted by someone other than a parent or guardian’ (OR = 2.38), and significantly *less* likely than men to have ‘caused extreme suffering or death to another person’ (OR = 0.41), been ‘exposed to war or conflict’ (OR = 0.50), had their ‘life threatened with a weapon’ (OR = 0.54), been ‘physically assaulted by someone other than a parent or guardian’ (OR = 0.54), been ‘involved in a human-made disaster’ (OR = 0.57), and been ‘involved in a life-threatening accident’ (OR = 0.57).

Table 2 here

Past-month prevalence of PTSD and CPTSD

The past-month prevalence of PTSD was 5.0% (95% CI = 3.7%, 6.3%) and the past-month prevalence of CPTSD was 7.7% (95% CI = 6.1%, 9.4%). Women were significantly more likely than men to meet diagnostic requirements for PTSD (6.3% vs 3.6%, $\chi^2 (1) = 4.05$, OR = 1.82 [95% CI = 1.01, 3.27]), but not CPTSD (8.8% vs 6.6%, $\chi^2 (1) = 1.80$, OR = 1.37 [95% CI = 0.86, 2.19]).

The most commonly reported index trauma was ‘someone close to you died in an awful manner’ (16.9%). However, the highest level of PTSD (12.5%) and CPTSD (37.5%) were observed among those who identified ‘sexual assault by a parent or guardian’ as their index trauma.

Past-year mental health care use

Nearly half (48.6%) of those who met diagnostic requirements for PTSD or CPTSD reported that they had attended a mental health professional in the past 12 months ($\chi^2 (1) = 111.47$, OR = 6.75 [95% CI = 4.58, 9.95]). Compared to those who did not meet diagnostic criteria for PTSD, those who did were more likely to report having attended a mental health professional in the past year ($\chi^2 (1) = 21.52$, OR = 3.68 [95% CI = 2.05, 6.59]). Likewise, those who met diagnostic requirements for CPTSD were more likely than those who did not to report having attended a mental health professional in the past year ($\chi^2 (1) = 100.69$, OR = 8.70 [95% CI = 5.36, 14.11]). There was no significant difference in health care utilization between those who met diagnostic requirements for PTSD and those who met requirements for CPTSD.

Comorbidities with Depression and GAD

In total, 15.2% (95% = 13.0%, 17.4%) and 10.5% (95% CI = 8.6%, 12.4%) met the diagnostic requirements for depression and GAD, respectively. Among those who met the diagnostic requirements for PTSD, 25.5% also met the criteria for depression (OR = 1.99, 95% CI = 1.04, 3.83), and 23.5% for GAD (OR = 2.83, 95% CI = 1.43, 5.59). Among those

who met diagnostic requirements for CPTSD, 67.1% met the criteria for depression (OR = 16.77, 95% CI = 10.05, 27.99), and 49.4% for GAD (OR = 12.52, 95% CI = 7.55, 20.75).

Risk factors associated with PTSD and CPTSD

The unadjusted and adjusted ORs for the associations between the 14 risk factors and meeting the diagnostic requirements for PTSD and CPTSD are presented in Table 3.

Table 3 here

The multinomial logistic regression model of diagnostic status with all predictor variables was statistically significant ($\chi^2(30) = 172.93, p < .001$, Cox and Snell $R^2 = .156$, Nagelkerke $R^2 = .257$, McFadden $R^2 = .182$). Four variables were significantly and uniquely associated with meeting the diagnostic requirements for PTSD: being female (AOR = 1.97, 95% CI = 1.02, 3.81), younger age (AOR = 0.97, 95% CI = 0.95, 0.99), exposure to a greater number of different traumas in childhood (AOR = 1.28, 95% CI = 1.09, 1.50), and exposure to a greater number of different traumas in adulthood (AOR = 1.31, 95% CI = 1.12, 1.52).

Seven variables were significantly and uniquely associated with meeting the diagnostic requirements for CPTSD: younger age (AOR = 0.97, 95% CI = 0.95, 0.99), being unemployed (AOR = 2.21, 95% CI = 1.04, 4.58), exposure to a greater number of differing traumas in childhood (AOR = 1.50, 95% CI = 1.30, 1.72), adolescence (AOR = 1.17, 95% CI = 1.02, 1.35), and adulthood (AOR = 1.31, 95% CI = 1.14, 1.50), reporting an interpersonal index trauma (AOR = 2.49, 95% CI = 1.42, 4.38), and fewer exposures to the index trauma (AOR = 0.91, 95% CI = 0.83, 0.99).

Discussion

The primary objective of this study was to provide the first assessment of the prevalence of trauma exposure and trauma-based psychopathology in the general adult population of Ireland. Furthermore, this study sought to determine if there were significant differences between men and women in their exposure to different traumatic events, and in

their likelihood of meeting diagnostic requirements for trauma-related psychopathology. Furthermore, this study sought to determine what proportion of people who screened positive for PTSD or CPTSD had accessed mental health services in the past year, the comorbidities between these disorders and two common psychiatric disorders (depression and generalized anxiety), and the risk factors associated with meeting the diagnostic criteria for PTSD and CPTSD.

We found that more than 80% of Irish adults had been exposed to at least one traumatic event in their lifetime and approximately two-thirds had experienced two or more different traumatic life events. These findings are higher than the global averages of 70.4% and 52.6%, respectively [1]. Moreover, the WMHS found that rates of trauma-exposure in European countries ranged from 28.6% in Bulgaria to 72.7% in France. However, when assessed in relation to studies that did not follow the WMHS survey methodology, current findings are consistent with other European estimates. For example, nationally representative studies from the Netherlands (81%) [27] and Sweden (81%) [28] reported comparable percentages of lifetime trauma exposure. It would appear, therefore, that methodological differences probably account for the disparities between our findings and the WMHS results, and that the percentage of people in the general adult population of Ireland who are trauma exposed is probably not markedly different from other Western European states.

We found that men and women did not differ in the *number* of traumatic events that they were exposed to, however, they did differ substantially in the *types* of traumatic events that they were exposed to. Women were more than four times as likely as men to report being sexually harassed, and nearly two-and-a-half times as likely to report being sexually assaulted (i.e., orally, anally, or vaginally raped). Contrastingly, men were nearly two-and-a-half times more likely than women to report being exposed to traumatic events characterised by physical violence, combat, and accidents. These findings are consistent with the general

landscape of sex differences in trauma exposure [15]. For example, in the WMHS there were no differences in the number of traumatic life events experienced by men and women, and, while women were twice as likely to have been exposed to sexual based traumas, men were up to two-and-a-half times more likely to have been exposed to physical, combat, and accident related traumas. Thus, the type and distribution of trauma exposure in the Irish population is consistent with what has been observed in other nations around the world.

Approximately one-in-eight Irish adults met the ICD-11's diagnostic requirements for PTSD or CPTSD. Specifically, slightly more people met requirements for CPTSD (7.7%) than PTSD (5.0%), however, the overlapping confidence intervals indicates that the difference between these two proportions was not statistically significant. The overall figure of 12.7% was similar to findings from the general population of Israel (11.6%) [13], and higher than findings from the general population of the United States (7.2%) [12]. The current study used nearly identical methods to both of these studies (i.e., representative samples drawn from online research panels, identical diagnostic algorithms, and identical method of assessing PTSD and CPTSD) meaning that these results can be compared with confidence. Collectively, these findings indicate that PTSD and CPTSD are common disorders in the general population. Of course, all of these figures have been obtained using self-report assessment methods and it is well established that self-report measures produce higher prevalence estimates of trauma-related disorders compared to clinician-administered diagnostic interviews [29]. A diagnostic interview for ICD-11 PTSD and CPTSD - the International Trauma Interview (ITI) - is under development [30], and an important next step will be to estimate the prevalence of these disorders using this tool. The true number of people in the population suffering from PTSD and CPTSD is likely to fall somewhere between the estimates obtained from self-reports and diagnostic interviews, therefore, collection of such data should be a priority for future research.

Approximately half of those who met diagnostic requirements for PTSD or CPTSD reported accessing mental health care services in the past year. Those who screened positive for PTSD and CPTSD were more likely to have accessed mental health care than those without these disorders, however, there was no significant difference in utilization of mental health care services between those with PTSD and those with CPTSD. These findings are important because they show that mental health professionals are as likely to encounter people in clinical practice with complex forms of traumatic distress as they are to encounter people with ‘standard’ PTSD. Given the recent introduction of CPTSD to the diagnostic nomenclature, and the likelihood that successful treatment of CPTSD requires additional and distinct clinical interventions to those typically used for PTSD [16], clinicians should be cognizant of the need to both screen for CPTSD, and to possibly adapt their clinical strategies, if necessary. These findings also indicate that there is a substantial mental health treatment gap between those who are affected by trauma-related psychopathology and those who are receiving mental health care. Addressing these unmet mental health care is advisable because traumatic stress disorders do not naturally remit for many people [31] and are associated with high levels of lost work productivity [32], increased risks of chronic disease [33], and early mortality [34].

One of the goals in revising the diagnosis of PTSD - and introducing CPTSD - in ICD-11 was to reduce diagnostic comorbidity [35]. However, our results are consistent with other findings [36, 37] that show that levels of comorbidity for ICD-11 PTSD and CPTSD are at least as high as those observed for DSM-IV and DSM-5 PTSD [38]. These results highlight the inherent limitations of a categorical model of psychiatric disorders [39], and indicate that efforts to reduce comorbidity by focusing on ‘core’ symptoms, or making ever more fine-grained distinctions between supposedly discrete disorders, is likely to be in vain. Nonetheless, our findings provide clinicians with additional evidence that patients with

PTSD, and especially CPTSD, are likely to also be experiencing other forms of internalizing psychopathology.

Finally, this study identified several exogenous risk factors that were uniquely associated with meeting the diagnostic requirements for PTSD and/or CPTSD. Three variables were associated PTSD and CPTSD: younger age, experiencing a greater number of different traumas in childhood, and experiencing a greater number of different traumas in adulthood. Being female was significantly associated with PTSD, but not CPTSD, consistent with what was found in Israel [13]. Moreover, the magnitude of the association between sex and PTSD *increased* when adjusting for all other risk factors. This is consistent with findings from the United States [12]. Being unemployed, experiencing a greater number of different traumas in adolescence, reporting an interpersonal index trauma, and reporting fewer exposures to one's index trauma were associated with CPTSD, but not PTSD. These results are in-line with existing data and theory [7, 10, 12], and highlight the importance of interpersonal and early life traumas for CPTSD, specifically.

These findings should be considered in light of several limitations. First, all data were collected via self-reports and therefore require replication with clinician-administered interviews. Second, although the sample was representative of the general population in terms of sex, age, and geographical distribution, it may not have been representative in terms of all other demographic variables. Additionally, a requirement of participation was that all questions were to be answered and it was not possible to determine the participation rate and the reasons for non-participation. These aspects of the sampling method limit the generalizability of these findings to the general population. Third, although a large number of risk factors were assessed, other known risk factors (e.g., lack of social support; substance misuse) were missing from the study/analysis.

In conclusion, the vast majority of Irish adults have experienced a traumatic life event, and a significant minority of the population are suffering from trauma-related psychopathology. While individuals suffering from PTSD or CPTSD are more likely to have accessed mental health care services than those who are not, just over half of these people have not sought mental health care in the last year. Closing this mental health care gap should be a public health priority given what is known about the chronicity of traumatic stress disorders, and the effect that these disorders can have on people's day-to-day functioning and overall health status.

Table 1. Sociodemographic characteristics of the sample ($N = 1,020$)

	% (n)
Sex	
Male	49.0 (500)
Female	51.0 (520)
Age in years	
18-24	12.3 (125)
25-34	20.2 (206)
35-44	23.5 (240)
45-54	19.1 (195)
55-64	14.1 (144)
65+	10.8 (110)
Age	M = 43.10, SD = 15.12
Region	
Dublin city and county	31.4 (320)
Leinster (not including Dublin)	22.5 (230)
Munster	26.9 (274)
Connaught	13.5 (138)
Ulster	5.7 (58)
Highest educational attainment	
Did not complete secondary school	7.1 (72)
Completed secondary school	39.2 (400)
Completed an undergraduate university degree	36.9 (376)
Completed a postgraduate university degree	16.9 (172)
Current relationship status	

In a committed relationship	69.5 (709)
Not in a committed relationship	30.5 (311)
Do you have Children?	
Yes	59.4 (606)
No	40.6 (414)
Current employment status	
Full-time employed	45.8 (467)
Part-time employed	17.8 (182)
Not in work (i.e., retired, student, caring for another, disabled)	27.7 (283)
Unemployed and seeking employment	8.6 (88)
Income level	
Below national mean of €45,611 per annum	71.7 (731)
Above national mean of €45,611 per annum	16.0 (163)
At or about national mean of €45,611 per annum	12.4 (126)

Table 2. Frequencies and sex differences for each traumatic life event ($N = 1,020$).

	Full Sample	Females	Males	Female risk
	%	%	%	OR (95% CI)
Someone close to you had a life-threatening illness or accident	51.9	53.8	49.8	1.18 (0.92, 1.50)
Physical assault by someone other than a parent or guardian (I)	39.3	32.1	58.4	0.54 (0.42, 0.69)
Someone close to you died in an awful manner	38.7	40.0	37.4	1.12 (0.87, 1.44)
Sexual harassment (e.g., unwanted sexualized comments or behaviours) (I)	31.1	45.2	16.4	4.20 (3.14, 5.63)
Physical assault by a parent or guardian (I)	31.0	33.5	28.4	1.27 (0.97, 1.66)
Witnessed another person experiencing extreme suffering or death (I)	24.6	24.2	25.0	0.96 (0.72, 1.28)
Life-threatening accident	22.6	17.9	27.6	0.57 (0.42, 0.77)
Life threatened with a weapon (I)	20.7	15.8	25.8	0.54 (0.40, 0.73)
Diagnosed with a life-threatening illness	14.1	14.1	16.2	0.71 (0.50, 1.02)
Sexual assault by someone other than a parent or guardian (I)	13.8	18.7	8.8	2.38 (1.63, 3.48)
Exposure to a human-made disaster	8.4	6.3	10.6	0.57 (0.36, 0.90)
Exposure to a natural disaster	8.0	6.5	9.6	0.66 (0.42, 1.04)
Exposure to war or combat (as a soldier or as a civilian) (I)	7.3	5.0	9.6	0.50 (0.30, 0.81)

Kidnapped or tortured (I)	5.7	4.6	6.8	0.66 (0.39, 1.14)
Sexual assault by a parent or guardian (I)	4.6	4.6	4.6	1.00 (0.56, 1.80)
Inflicted extreme suffering or death on another person (I)	4.5	2.7	6.4	0.41 (0.21, 0.77)

Note: OR (95% CI) = odds ratio with 95% confidence intervals; ORs estimated from a chi-square test of independence; Significant sex differences ($p < .05$) are in bold; Traumatic events classified as interpersonal are indicated by (I).

Table 3. Unadjusted and adjusted odds ratios for the associations between each risk factor and PTSD and CPTSD ($N = 1,020$).

Risk factors	PTSD	PTSD	CPTSD	CPTSD
	Unadjusted ORs	Adjusted ORs	Unadjusted ORs	Adjusted ORs
	(95% CI)	(95% CI)	(95% CI)	(95% CI)
Female sex	1.86 (1.04, 3.36)*	1.97 (1.02, 3.81)*	1.42 (0.89, 2.26)	1.30 (0.75, 2.25)
Age	0.96 (0.94, 0.98)***	0.97 (0.95, 0.99)*	0.96 (0.94, 0.98)***	0.97 (0.95, 0.99)**
Not in a relationship	0.89 (0.47, 1.67)	0.87 (0.45, 1.71)	1.52 (0.94, 2.43)	1.63 (0.95, 2.81)
Did not finish school	0.71 (0.40, 1.27)	0.89 (0.48, 1.66)	0.64 (0.40, 1.03)	0.67 (0.39, 1.15)
Currently unemployed	1.27 (0.49, 3.31)	1.20 (0.44, 3.31)	2.31 (1.21, 4.39)*	2.21 (1.07, 4.58)*
Annual income below the national mean	0.85 (0.46, 1.56)	0.87 (0.44, 1.71)	0.89 (0.54, 1.47)	1.05 (0.57, 1.94)
Taken in care during childhood	9.28 (3.60, 23.92)***	1.92 (0.52, 7.08)	8.45 (3.66, 19.52)***	0.62 (0.18, 2.18)
Growing up with a family member with a mental illness	2.25 (1.24, 4.08)**	1.10 (0.55, 2.20)	3.63 (2.26, 5.81)***	1.59 (0.90, 2.79)
Number of childhood traumas	1.48 (1.30, 1.69)***	1.28 (1.09, 1.50)**	1.58 (1.41, 1.78)***	1.50 (1.30, 1.72)***
Number of adolescent traumas	1.29 (1.12, 1.49)***	1.01 (0.84, 1.21)	1.39 (1.25, 1.55)***	1.17 (1.02, 1.35)*

Number of adulthood traumas	1.29 (1.11, 1.48)**	1.31 (1.12, 1.52)***	1.22 (1.08, 1.38)**	1.31 (1.14, 1.50)***
Number of exposures to the index trauma	0.99 (0.91, 1.07)	0.96 (0.88, 1.05)	0.94 (0.87, 1.01)	0.91 (0.83, 0.99)*
Index trauma was interpersonal	1.53 (0.87, 2.70)	1.60 (0.87, 2.98)	2.51 (1.53, 4.10)***	2.49 (1.42, 4.38)***
Index trauma occurred < 1 year ago	3.33 (1.76, 6.30)***	1.94 (0.89, 4.20)	2.36 (1.34, 4.15)**	0.92 (0.42, 1.99)

Note: Statistical significance indicated by * $p < .05$, ** $p < .01$, *** $p < .001$.

References

1. Benjet C, Bromet E, Karam EG et al (2016) The epidemiology of traumatic event exposure worldwide: results from the World Mental Health Survey Consortium. *Psych Med* 46:327-343. doi:10.1017/s0033291715001981
2. American Psychological Association (1994) Diagnostic and statistical manual of mental disorders, 4th edn. Author, Washington DC.
3. Koenen KC, Ratanatharathorn A, Ng L et al (2017) Posttraumatic stress disorder in the World Mental Health Surveys. *Psych Med* 47:2260-2274. doi:10.1017/s0033291717000708
4. Kessler RC, Aguilar-Gaxiola, Alonso J et al (2017). Trauma and PTSD in the WHO World Mental Health Surveys. *Eur J Psychotraumatol* 8:1353383. doi: 10.1080/20008198.2017.1353383
5. Carr A, Dooley B, Fitzpatrick M et al (2010) Adult adjustment of survivors of institutional child abuse in Ireland. *Child Abuse Neglect*, 34:477-489. doi: 10.1016/j.chiabu.2009.11.003
6. Organisation for Economic Co-operation and Development. (2017). Health at a Glance 2017: OECD Indicators. Retrieved from https://www.oecd-ilibrary.org/social-issues-migration-health/health-at-a-glance-2017_health_glance-2017-en
7. World Health Organization (2018) The ICD-11 for mortality and morbidity statistics. Available from: <https://icd.who.int/browse11/l-m/en> [Accessed 27th June 2019].
8. World Health Organization (1992) The ICD-10 classification of mental and behavioural disorders: Clinical descriptions and diagnostic guidelines. World Health Organization, Geneva.
9. American Psychiatric Association (2013) Diagnostic and statistical manual of mental disorders, 5th edn. Author, Washington DC.

10. Brewin CR, Cloitre M, Hyland P et al (2017) A review of current evidence regarding the ICD-11 proposals for diagnosing PTSD and complex PTSD. *Clin Psych Rev* 58:1-15. <https://doi.org/10.1016/j.cpr.2017.09.001>
11. Brewin CR (2019) Complex post-traumatic stress disorder: a new diagnosis in ICD-11. *BJPsych Advances* 1-8. doi: 10.1192/bja.2019.48
12. Cloitre M, Hyland P, Bisson JI, Brewin CR, Roberts NP, Karatzias T, Shevlin M (2019) ICD-11 PTSD and Complex PTSD in the United States: A population-based study. *J Trauma Stress* 32:833-842. <https://doi.org/10.1002/jts.22454>
13. Ben-Ezra M, Karatzias T, Hyland P et al (2018) Posttraumatic stress disorder (PTSD) and complex PTSD (CPTSD) as per ICD-11 proposals: A population study in Israel. *Depress Anx* 35:264-274. doi: 10.1002/da.22723
14. Maercker A, Hecker T, Augsburger M, Kliem S (2018) ICD-11 Prevalence Rates of Posttraumatic Stress Disorder and Complex Posttraumatic Stress Disorder in a German Nationwide Sample. *J Nerv Ment Dis* 206:270-276. doi: 10.1097/nmd.0000000000000790
15. Tolin DF, Foa EB (2006) Sex differences in trauma and posttraumatic stress disorder: a quantitative review of 25 years of research. *Psychol Bull* 132:959-992. doi: 10.1037/0033-2909.132.6.959
16. Karatzias T, Cloitre M (2019) Treating adults with complex posttraumatic stress disorder using a modular approach to treatment: Rationale, evidence, and directions for future research. *J Trauma Stress* 32:870-876. <https://doi.org/10.1002/jts.22457>
17. Central Statistics Office. (2020). Census 2016 Reports. Retrieved from <https://www.cso.ie/en/census/census2016reports/>

18. Hyland, P., Shevlin, M., Karatzias, T., & Cloitre, M. The International Trauma Exposure Measure (ITEM). Unpublished measure. Retrieved January 3, 2020 from <https://www.traumameasuresglobal.com/item>
19. Weathers FW, Blake DD, Schnurr PP, Kaloupek DG, Marx BP, Keane TM (2013) The Life Events Checklist for DSM-5 (LEC-5). Instrument available from the National Center for PTSD at www.ptsd.va.gov
20. Ehring T, Quack D (2010) Emotion regulation difficulties in trauma survivors: the role of trauma type and PTSD symptom severity. *Behav Ther* 41:587-598. doi:10.1016/j.beth.2010.04.004
21. Hyland P, Karatzias T, Cloitre M, Shevlin M (2019) Examining the discriminant validity of Complex PTSD and Borderline Personality Disorder symptoms: Results from a UK community sample. *J Trauma Stress* 32:855-863. <https://doi.org/10.1002/jts.22444>
22. Cloitre M, Shevlin M, Brewin CR et al (2018) The International Trauma Questionnaire: development of a self-report measure of ICD-11 PTSD and complex PTSD. *Acta Psychiatr Scand* 138:536-546. doi:10.1111/acps.12956
23. Kroenke K, Spitzer RL, Williams JB (2001) The PHQ-9: validity of a brief depression severity measure. *J Gen Intern Med* 16:606-613. doi:10.1046/j.15251497.2001.016009606.x
24. Manea L, Gilbody S, McMillan D (2015) A diagnostic metaanalysis of the Patient Health Questionnaire-9 (PHQ-9) algorithm scoring method as a screen for depression. *Gen Hosp Psychiatry* 37:67–75. <https://doi.org/10.1016/j.genhosppsy.2014.09.009>
25. Spitzer RL, Kroenke K, Williams JB, Lowe B (2006) A brief measure for assessing generalized anxiety disorder: the GAD-7. *Arch Intern Med* 166:1092–1097. doi:10.1001/archinte.166.10.1092

26. Kertz S, Bigda-Peyton J, Bjorgvinsson T (2013) Validity of the generalized anxiety disorder-7 scale in an acute psychiatric sample. *Clin Psychol Psychother* 20:456–464. doi: 10.1002/cpp.1802
27. de Vries GJ, Olf M (2009) The lifetime prevalence of traumatic events and posttraumatic stress disorder in the Netherlands. *J Trauma Stress* 22:259-267. doi:10.1002/jts.20429
28. Frans O, Rimmo PA, Aberg L, Fredrikson M (2005) Trauma exposure and post-traumatic stress disorder in the general population. *Acta Psychiatr Scand* 111:291-299. doi:10.1111/j.1600-0447.2004.00463.x
29. Hoffman YS, Diamond GM, Lipsitz JD (2011) The challenge of estimating PTSD prevalence in the context of ongoing trauma: the example of Israel during the Second Intifada. *J Anxiety Disord* 25:788-793. doi: 10.1016/j.janxdis.2011.03.016.
30. Bondjers K, Hyland P, Roberts NP, Bisson JI, Willebrand M, Arnberg F (2019) Validation of a clinician-administered diagnostic measure of ICD-11 PTSD and Complex PTSD: the International Trauma Interview in a Swedish sample. *Eur J Psychotraumatol* 10:1665617. <https://doi.org/10.1080/20008198.2019.1665617>
31. Santiago PN, Ursano RJ, Gray CL, et al (2013) A systematic review of PTSD prevalence and trajectories in DSM-5 defined trauma exposed populations: Intentional and non-intentional traumatic events. *PLOS ONE*, 8: e59236. doi:10.1371/journal.pone.0059236
32. Kessler RC (2000) Posttraumatic stress disorder: the burden to the individual and to society. *J Clin Psychiat* 61:4-12; discussion 13-14.
33. Edmondson D, von Kanel R (2017) Post-traumatic stress disorder and cardiovascular disease. *Lancet Psychiatry* 4:320-329. doi:10.1016/s2215-0366(16)30377-7

34. Boscarino JA (2006) Posttraumatic stress disorder and mortality among U.S. Army veterans 30 years after military service. *Ann Epidemiol* 16:248-256.
doi:10.1016/j.annepidem.2005.03.009
35. First MB, Reed GM, Hyman SE, Saxena S (2015) The development of the ICD-11 clinical descriptions and diagnostic guidelines for mental and behavioural disorders. *World Psychiatry* 14:82-90. doi.org/10.1002/wps.20189
36. Shevlin M, Hyland P, Vallieres F et al (2018) A comparison of DSM-5 and ICD-11 PTSD prevalence, comorbidity and disability: an analysis of the Ukrainian Internally Displaced Person's Mental Health Survey. *Acta Psychiatr Scand* 137:138-147. doi: 10.1111/acps.12840
37. Hyland P, Shevlin M, Fyvie C, Karatzias T (2018) Posttraumatic stress disorder (PTSD) and complex PTSD (CPTSD) in DSM-5 and ICD-11: Clinical and behavioural correlates. *J Trauma Stress* 31:174-180. doi: 10.1002/jts.22272
38. Rytwinski NK, Scur MD, Feeny NC, Youngstrom EA (2013) The co-occurrence of major depressive disorder among individuals with posttraumatic stress disorder: a meta-analysis. *J Trauma Stress* 26:299-309. doi: 10.1002/jts.21814
39. Kotov R, Krueger RF, Watson D et al (2017) The Hierarchical Taxonomy of Psychopathology (HiTOP): A dimensional alternative to traditional nosologies. *J Abnorm Psychol* 126:454-477. doi: 10.1037/abn0000258