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Beyond Direct Trauma: Epidemiology of Exposure Modalities, Event Types, and PTSD in a National Polish Sample

Abstract: The epidemiological literature on trauma has largely centered on direct exposure, leaving other exposure pathways underexamined. We broaden this perspective by (1) mapping population-wide trauma exposure across four modalities—direct personal exposure, witnessing, indirect exposure via a close other, and work-related indirect exposure—and (2) estimating event-specific conditional risk of PTSD within each trauma exposure modality, with particular attention to indirect and multimodal exposures. Data came from a national sample of Polish adults ($N = 808$) collected in 2017. Trauma exposure was assessed with the Multidimensional Trauma Exposure Scale (MTES) and PTSD with the PTSD Checklist for DSM-5 (PCL-5). Trauma exposure was nearly universal (95.1%). Modality-specific exposure rates were 89.5% (direct), 78.9% (witnessed), 63.7% (via close other), and 29.4% (occupational), with significant gender-specific patterns. PTSD prevalence was 23.8%, higher in women than men (26.7% vs. 15.1%; $OR = 2.09$, 95% CI [1.47, 2.97]). Notably, all PTSD cases reported multimodal exposure. Event-specific patterns within modalities were associated with elevated PTSD risk. These findings show the trauma landscape extends far beyond direct events: indirect and multimodal exposures are common and consequential, suggesting PTSD often reflects the cumulative burden of overlapping exposures. Representing the pre-COVID-19 landscape, the findings constitute a critical baseline for evaluating the subsequent surge in mental health challenges. Consequently, public health surveillance should systematically incorporate these broader exposure pathways to monitor epidemiological trends while requiring rigorous operationalization to avoid diagnostic inflation.

Keywords: *Posttraumatic stress, PTSD, Trauma Exposure, Exposure Modalities, Indirect Trauma, Epidemiology*

INTRODUCTION

Exposure to traumatic events—such as violent assaults, accidents, or disasters—is pervasive. Global epidemiological surveys indicate that approximately 70% of people experience at least one potentially traumatic event over their life course, with substantial cross-national and cultural variation (Benjet et al., 2016; Knipscheer et al., 2020; Olff et al., 2025). Although most trauma-exposed individuals do not develop posttraumatic stress disorder (PTSD), a substantial minority does, making PTSD a significant public-health concern (Mew et al., 2022; Watson, 2019). The PTSD prevalence is estimated at 5–6% worldwide, but in resource-limited or collectively traumatized populations, rates can range from 30% to 60% (Atwoli et al., 2017; Holmes et al., 2022; Ng et al., 2020; Schein et al., 2021). The COVID-19 pandemic further underscored this vulnerability, with PTSD prevalence often exceeding 20% in affected populations (Cénat et al., 2020; Lotzin et al., 2022). Such cross-national variation indicates that cultural, historical, and systemic factors shape trauma-related distress. Poland—the setting for the present study—provides an illustrative case, where population-based studies consistently estimate probable

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PTSD at 18–19%, a rate substantially higher than broader European estimates (Darves-Bornoz et al., 2008; Pettrich et al., 2025; Rzeszutek et al., 2023a).

Trauma exposure modalities and PTSD risk

The risk of developing PTSD is not uniform across all traumatic experiences, as it is event-dependent and strongly influenced by the trauma's nature, such as its intensity and interpersonal context (Olff et al., 2025; Rzeszutek et al., 2023a; Schincariol et al., 2024). The International Classification of Diseases, 11th Revision (ICD-11) acknowledges this by introducing complex PTSD (CPTSD) for sustained, relational traumas (WHO, 2019). However, relying solely on objective exposure indices is insufficient to explain posttraumatic pathology. As emphasized in the foundational cognitive model of PTSD (Ehlers & Clark, 2000), the subjective appraisal of an event is a decisive factor in traumatization. Research consistently demonstrates that individual perceptions of threat, uncontrollability, and personal meaning are frequently more predictive of posttraumatic stress than the objective characteristics of the stressor itself (Boals, 2018; Olff et al., 2025). Thus, a comprehensive epidemiological account must recognize that PTSD risk is shaped by the interplay between the event type and its subjective processing, offering greater predictive value than a simple exposed–unexposed distinction (Schincariol et al., 2024). Thus, event characteristics and their individual perceptions are more predictive of PTSD than a simple exposed–unexposed distinction (Schincariol et al., 2024). Importantly, such experiences can occur via multiple exposure modalities—the distinct etiological pathways through which an individual may experience or encounter a traumatic event. Most epidemiological research focuses on direct exposure—personally being assaulted, injured, or threatened—which has shaped global estimates of trauma prevalence and PTSD risk (Benjet et al., 2016; Koenen et al., 2017). Modern diagnostic frameworks also recognize indirect trauma exposure, defined as encountering trauma without firsthand experience. For example, the Diagnostic and Statistical Manual of Mental Disorders (5th ed., text rev.; DSM-5-TR) outlines four exposure modalities: direct personal experience, in-person witnessing, learning about trauma endured by a close other, and repeated or extreme indirect exposure in occupational contexts (APA, 2022). This expanded definition acknowledges that indirect trauma constitutes a genuine pathway to PTSD. By contrast, the ICD-11 defines trauma more concisely as exposure to an extremely threatening or horrific event, leaving the recognition of indirect exposures largely to clinical interpretation (WHO, 2019).

A growing body of evidence indicates that indirect exposures contribute to PTSD, typically at lower risk than direct trauma (Even et al., 2024; Ludick & Figley, 2017; Sprang & Steckler, 2023). Much of this work focuses on high-risk groups such as mental health providers (Henderson et al., 2025), healthcare workers (Melinte et al., 2023), or families of individuals with frequent occupational exposure to traumatic events (Wang et al., 2023). Yet, despite this empirical recognition, indirect exposure remains underexplored in general-population epidemiology. Population-based studies that quantify both direct and indirect exposures within the same sample are uncommon; many exclude indirect experiences, merge them with direct exposures, or use a generic indirect category without specifying events (Benjet et al., 2016; Hatch & Dohrenwend, 2007; Koenen et al., 2017). The limited population-based evidence shows that indirect exposure is associated with elevated PTSD risk—for example, individuals indirectly exposed in the context of a natural disaster and the COVID-19 pandemic had significantly higher odds of PTSD than unexposed ones (Even et al., 2024). Moreover, cumulative trauma matters: experiencing multiple events—particularly a mix of direct and indirect exposures over time—substantially increases the likelihood of PTSD (May & Wisco, 2016; Even et al., 2024). These findings indicate that indirect exposure may have meaningful mental-health and public-health implications, especially when compounded by other stressors, and they underscore the importance of clarifying how exposure modalities and event types interact to improve epidemiologic measures.

Current debates on the definition of trauma

The empirical study of trauma is paralleled by an active theoretical debate over its fundamental definition. The DSM-5-TR's inclusion of indirect exposures reflects an ongoing effort to delineate the boundaries of what constitutes a traumatic event, but this expansion is contested. A prominent point of contention concerns exposure via mass media. While empirical studies suggest that intense media consumption following collective traumas can elicit symptoms comparable to direct exposure (Holman et al., 2014; Pfefferbaum et al., 2014), this modality remains explicitly excluded from DSM-5 criteria to prevent diagnostic inflation (McNally, 2009). Conversely, critics of such strict gatekeeping argue that it may exclude individuals with genuine posttraumatic symptoms following subjectively appraised traumas, with some advocating for the elimination of the event criterion altogether in favor of a purely symptom-based diagnosis (Marx et al., 2024). This tension illustrates the broader challenge of balancing inclusivity with diagnostic precision. The debate is further complicated by the challenge of classifying ongoing stressors. Systemic issues like racial discrimination and oppressive violence, as well as protracted threats such as climate-related disasters—experienced both directly and indirectly—can elicit PTSD symptoms yet are often underrecognized by event-based criteria (Saraiya et al., 2025). This conceptual debate has direct epidemiological implications: decisions on whether to include indirect exposures and whether to prioritize objective enumeration over subjective appraisal fundamentally shape population-level estimates of trauma exposure and PTSD risk.

Study rationale

The present study extends the epidemiological lens beyond direct trauma exposure to provide a more comprehensive, population-level account of how different

exposure modalities relate to PTSD risk. Specifically, our primary objectives were to: (1) map the prevalence and distribution of trauma exposure across four distinct modalities: direct personal exposure, witnessing, indirect exposure via a close other, and indirect exposure in an occupational context; and (2) estimate the conditional risk for PTSD associated with specific events within each exposure modality. We also examined gender differences in trauma exposure patterns and PTSD prevalence. Existing epidemiological literature consistently identifies female gender as a robust predictor of PTSD, with women exhibiting roughly twice the risk of men despite often reporting lower overall volumes of trauma exposure (Tolin & Foa, 2006; Olff, 2017). This "gender paradox" is frequently attributed to differences in the types of trauma experienced (e.g., higher rates of sexual violence among women), as well as variations in peri-traumatic appraisal and social support (Olff et al., 2025; Rzeszutek et al., 2023a).

We conducted this investigation in Poland, a country characterized by a notably high burden of trauma-related psychopathology compared to Western European estimates (Rzeszutek et al., 2023a). This elevated burden is likely rooted in a history of collective traumas, including the lasting impact of World War II (Lis-Turlejska et al., 2018), the systemic socio-political transformations of the late 1980s (Rutkowski & Dembińska, 2016), and major natural disasters such as the floods of 1997 and 2010 (Kaniasty, 2012). These historical factors create a specific landscape of vulnerability. By analyzing this unique population, we provide critical, site-specific evidence on how direct and indirect exposures accumulate and translate into PTSD risk in a national general-population sample. Finally, we situate this investigation within ongoing definitional debates, recognizing that such empirical estimates are essential to inform—though not definitively settle—critical questions of how trauma is operationalized in research and practice.

Finally, the timing of this study (2017) offers a distinct epidemiological advantage. By predating the global onset of the COVID-19 pandemic (Dragan et al., 2025), as well as subsequent regional events of profound traumatic potential —most notably the war in Ukraine (Chudzicka-Czupała et al., 2023)—our data establish a critical "pre-crisis" baseline. This enables the distinction between structural patterns of trauma exposure and the acute psychopathological sequelae of these compounded global and neighboring stressors (Carpiniello, 2023; Cénat et al., 2020).

METHOD

Participants and Procedure

Data were drawn from a national sample of Polish adults (aged 18–65). To ensure high methodological rigor and sample integrity, recruitment was entrusted to a specialized external research panel provider. The study employed a stratified quota sampling procedure based on official census data (Statistics Poland, 2016) to align with national parameters for age, gender, and size of municipality. The collection process proceeded dynamically until specific demographic quotas were saturated. Furthermore, to ensure data validity, the provider applied standard quality-control protocols, including duplicate entries preventions, minimum response-time thresholds, and response pattern recognition. Data collection was carried out in October 2017. This period predates the onset of the COVID-19 pandemic, thus capturing data unaffected by pandemic-related stressors. All participants provided informed consent, and the study protocol received approval from SWPS University Review Board (Decision No. 23/2017).

The final sample comprised (N = 808) individuals. The sample was balanced in terms of gender (51.4% women), with a mean age of 41.9 years (SD = 13.6). Geographically, the sample mirrored the national distribution across all 16 administrative regions (voivodeships), with a majority residing in urban areas (61.0%). As educational level was not a stratification criterion, the sample overrepresented participants with higher education (49.9% vs. 29% nationally) and secondary education (43.1% vs. 35%), while underrepresenting those with lower education. Detailed characteristics are presented in Table 1.

Measures

Trauma exposure was assessed with the Multidimensional Trauma Exposure Scale (MTES; adapted from Cieslak et al., 2013). MTES captures four exposure modalities: direct involvement in a traumatic event, in-person witnessing of the event, indirect exposure via a close other, and work-related indirect exposure. Consistent with DSM-5-TR criteria, participants were explicitly instructed to exclude exposure through electronic media, television, or pictures, unless it was work-related. For each modality, participants indicated whether, during adulthood, they had experienced 10 potentially traumatic events—natural disaster, transportation accident, other serious accident, physical assault, sexual assault, other life-threatening event, crime, military combat/war-zone exposure, life-threatening illness or injury, sudden death of someone close, and an "other" option. For each event, participants rated exposure volume (0–4; 0 = none, 4 = more than 20 incidents). Exposure diversity was calculated as the count of distinct event types endorsed per modality (range = 0–10 per modality) and across modalities (total range = 0–40). Given the index-based design, internal consistency was not computed.

PTSD symptoms were measured with the 20-item PTSD Checklist for DSM-5 (PCL-5; Weathers et al., 2013). Respondents rated symptom severity (re-experiencing, avoidance, negative alterations in cognition and mood, and arousal) on a 0–4 scale. We utilized a composite-event instruction, asking participants to report symptoms in response to traumatic experiences broadly, rather than limiting the assessment to a single index trauma. This strategy, established in epidemiological surveys (Kilpatrick et al., 2013), was chosen to capture the cumulative burden of multimodal exposure. Crucially, the PCL-5 was administered immediately following the detailed exposure

Table 1. Sociodemographic characteristics of the sample

Characteristics	*n*	%	*M(SD)*
Total	808	100	
Gender			
Female	415	51.4	
Male	393	48.6	
Age (in years)			41.9 (13.6)
18-24	108	13.4	
25-39	272	33.6	
40-54	218	27.0	
55-65	210	26.0	
Size of municipality			
Rural Area	317	39.2	
Urban area			
< 20,000 inhabitants	193	23.9	
< 100,000 inhabitants	74	9.2	
< 500,000 inhabitants	132	16.3	
> 500,000 inhabitants	92	11.4	
Level of education			
Below secondary education	56	6.9	
Secondary education	348	43.1	
Higher education	404	49.9	
Diversity of exposure			7.68 (0.19)
Number of exposures to a given event			1–2
Total number of exposures per capita			10.87 (0.35)

Note. N = 808. Diversity of exposure = the mean number of different types of traumatic events (across all trauma exposure modalities) during adulthood; Number of exposures to a given event = the average number of exposures to particular traumatic event during adulthood; Total number of exposures per capita = the product term of diversity of exposure and the median for the number of traumatic exposures to a given event.

assessment. Thus, respondents remained contextually anchored to the specific direct and indirect potentially traumatic events they had indicated. Internal consistency was excellent (α = .97 total; subscales .89–.93). The diagnostic algorithm followed DSM-5-TR symptom criteria: at least one re-experiencing symptom, one avoidance symptom, two symptoms of negative alterations in cognitions and mood, and two arousal symptoms, counting items rated ≥2 as present. Duration and impairment were not assessed, consistent with screening practice.

Sociodemographic variables covered gender identity, age, and size of municipality.

Data Analysis

Analyses were conducted in IBM SPSS Statistics 25 (Complex Samples module). Trauma exposure rates were computed per each exposure modality as the percentage of the sample exposed to ≥1 event; total exposure was defined as the percentage of the sample exposed to any event regardless the exposure modality. Population-level frequency of exposure was expressed as number of exposures to each event per 100 persons (event prevalence × mean number of occurrences). Exposure diversity was the mean count of distinct potentially traumatic events (per modality and overall). PTSD prevalence was calculated as the percentage of the sample meeting the DSM-5-TR symptom-based screening threshold. Conditional PTSD risk was estimated using logistic regression with 5,000 bootstrap replications, adjusted for gender, age, and size of municipality; odds ratios with 95% CIs were produced. Gender differences in the prevalence of PTSD and specific traumatic events were examined using design-adjusted χ^2 tests. Missing data were assessed with Little's Missing Completely At Random (MCAR) test (Little & Rubin, 2002) and handled by multiple imputation (m = 5).

RESULTS

Preliminary Analyses

Of the total sample (N = 808), 54.2% completed all items; no variable exceeded 5% missingness (Garson, 2015). Little's test indicated data were not missing

completely at random (χ^2 = 34230.75, p < .001), supporting multiple imputation (Groenwold et al., 2012). Main analyses used the imputed dataset.

Main Analyses

Prevalence of trauma exposure across modalities. 95.1% of the sample reported at least one traumatic event, and by modality: direct personal exposure, 89.5%; witnessing a traumatic event, 78.9%; indirect exposure via close other, 63.7%; and job-related indirect exposure, 29.4% (Table 2). Participants endorsed, on average, 7.25 events. Gender differences emerged across trauma exposure modalities. Women were more frequently indirectly exposed via close other (67.3%; $\chi^2(1) = 4.81$, $p < .05$), while men reported higher rates of indirect job-related exposure (34.8%; $\chi^2(1) = 11.76$, $p < .01$). Direct and witnessed trauma were equally prevalent across genders. A small subset of the sample (4.9%) reported no exposure to traumatic events, with no significant sociodemographic differences compared to the exposed ones.

Event types within modalities. Event prevalence varied by trauma exposure modality, however, a similar set of events emerged as the most common across exposure modalities (Table 3). For direct, personal exposure most prevalent were: sudden death of a close person (55.2%), life-threatening illness or injury (54.9%), and transportation accident (46.4%); for witnessing: life-threatening illness or injury (54.9%), transportation accident (42.2%), and sudden death of someone close (38.3%); for indirect exposure via close other: transportation accidents (38.1%), life-threatening illness or injury (37.2%), and sudden death of someone close (37.2%). In job-related contexts, most common were indirect exposure to transportation accident (15.6%), sudden death of someone close (14.1%), and life-threatening illness or injury (11.0%).

Notably, some events, although not involving the largest proportion of the sample, were common due to their frequency—for example, physical assault experienced via witnessing (76.4 per 100 persons), indirectly via a close other (67.6 per 100 persons), and in job-related context (76.8 per 100 persons). Across modalities, population-level frequency rates were highest for life-threatening illness or injury: 82.3 exposures per 100 persons via personal participation in the event and 148.8 per 100 persons via indirect exposure through close other. Military combat or exposure to a war zone was least common across exposure modalities, except indirect job-related exposure (due to exposure frequency: 26.4 per 100 persons). Detailed results are presented in Table 3.

Gender differences were consistent across trauma exposure modalities for particular event types. For example, women reported more frequent exposure to

Table 2. Prevalence of trauma exposure by modality and sociodemographic characteristics

Socio-demographics	*n*	Trauma exposure modality				
		Total % *n (SE)*	**Direct exposure: Participation** % *n (SE)*	**Direct exposure: Witnessing** % *n (SE)*	**Indirect exposure: Close other** % *n (SE)*	**Indirect exposure: Job** % *n (SE)*
Total	808	95.1 (0.7)	89.5 (1.1)	78.9 (1.4)	63.7 (1.7)	29.4 (1.6)
Gender						
Female	415	95.8 (0.9)	91.3 (1.3)	78.3 (2.0)	67.3 (2.3)	24.0 (2.1)
Male (ref.)	393	94.4 (1.1)	87.6 (1.6)	79.6 (2.0)	60.2 (2.5)	34.8 (2.4)
$\chi^2(1)$		0.96	3.48	0.14	**4.81***	**11.76****
Age (in years) 18-24	108	95.2 (2.0)	91.6 (2.6)	80.6 (3.7)	61.1 (4.7)	20.5 (3.9)
25-39	272	93.8 (1.4)	84.6 (2.2)	74.7 (2.6)	60.0 (2.9)	24.8 (2.6)
40-54	218	98.6 (0.8)	95.3 (1.4)	81.5 (2.6)	64.6 (3.2)	30.4 (3.1)
55-65 (ref.)	210	92.3 (1.8)	88.0 (2.2)	81.4 (2.7)	70.3 (3.1)	40.7 (3.3)
$\chi^2(3)$		**9.84***	**15.95****	4.97	6.22	**19.56*****
Size of municipality Rural Area	317	95.2 (1.2)	90.3 (1.6)	76.4 (2.4)	65.4 (2.6)	31.0 (2.5)
Urban area < 20,000 inhabitants	193	93.4 (1.7)	88.6 (2.2)	78.4 (2.9)	59.7 (3.5)	33.2 (3.4)
< 100,000 inhabitants	74	93.2 (3.0)	87.8 (3.9)	78.3 (4.8)	58.4 (5.5)	30.9 (5.3)
< 50,000 inhabitants	132	97.3 (1.3)	90.8 (2.4)	84.3 (3.2)	62.9 (4.3)	25.2 (3.8)
> 500,000 inhabitants (ref.)	92	97.0 (1.6)	87.5 (3.4)	81.8 (3.9)	72.0 (4.7)	20.5 (4.3)
$\chi^2(4)$		3.31	0.80	0.50	5.48	6.48

Note. N = 808. % n = prevalence of exposure to traumatic events. *SE* = standard error for population estimates. χ^2 = chi square test for independence. Direct exposure: Participation = personal experience of a traumatic event; Direct exposure: Witnessing = being a personal witness of a traumatic event; Indirect Exposure: Close other = learning that the traumatic event occurred to a close family member or friend, Indirect exposure; Job = job-related exposure to aversive details of the traumatic events. * $p < .05$, ** $p < .01$, *** $p < .001$. Bold indicates significant results

Table 3. Prevalence of traumatic events by exposure modality.

	Direct exposure: Participation			Direct exposure: Witnessing			Indirect exposure: Close other			Indirect exposure: Job		
Traumtic event	**%** ***(SE)***	**Number of exposures**	**Number of exposures per 100 persons (*SE*)**	**%** ***(SE)***	**Number of exposures**	**Number of exposures per 100 persons (*SE*)**	**%** ***(SE)***	**Number of exposures**	**Number of exposures per 100 persons (*SE*)**	**%** ***(SE)***	**Number of exposures**	**Number of exposures per 100 persons (*SE*)**
1. Natural disaster	23.4 (1.5)	1-2	35.1 (2.2)	25.7 (1.5)	1-2	38.5 (2.2)	21.6 (1.5)	1-2	32.4 (2.2)	10.5 (1.1)	3-5	42.0 (4.4)
2. Transportation accident	46.4 (1.7)	1-2	69.9 (2.5)	42.2 (1.7)	1-2	63.3 (2.5)	38.1 (1.7)	1-2	57.1 (2.5)	15.6 (1.2)	3-5	62.4 (4.8)
3. Other serious accident	14.1 (1.2)	1-2	21.1 (1.8)	19.9 (1.4)	1-2	29.8 (2.1)	15.8 (1.3)	1-2	23.7 (1.9)	10.4 (1.1)	3-5	41.6 (4.4)
4. Physical assault	20.3 (1.4)	1-2	30.4 (2.1)	19.1 (1.4)	3-5	76.4 (5.6)	16.9 (1.3)	3-5	67.6 (5.2)	9.6 (1.0)	6-10	76.8 (8.0)
5. Sexual assault	7.8 (0.9)	1-2	11.7 (1.3)	3.3 (0.6)	3-5	13.2 (2.4)	6.9 (0.9)	1-2	10.3 (1.3)	4.4 (0.7)	3-5	17.6 (2.8)
6. Other life-threatening crime	11.2 (1.1)	1-2	16.8 (1.6)	8.4 (1.0)	3-5	33.6 (4.0)	13.6 (1.2)	1-2	20.4 (1.8)	5.2 (0.8)	3-5	20.8 (3.2)
7. Military combat or exposure to a war zone	2.9 (0.6)	3-5	11.6 (2.4)	2.6 (0.5)	3-5	10.4 (2.0)	5.8 (0.8)	1-2	8.7 (1.2)	3.3 (0.6)	6-10	26.4 (4.8)
8. Life-threatening illness or injury	54.9 (1.7)	1-2	82.3 (2.5)	47.5 (1.7)	1-2	71.2 (2.5)	37.2 (1.7)	3-5	148.8 (6.8)	11.0 (1.1)	3-5	44.0 (4.4)
9. Sudden death of someone close	55.2 (1.7)	1-2	82.8 (2.5)	38.3 (1.7)	1-2	57.4 (2.5)	37.2 (1.6)	1-2	55.8 (2.4)	14.1 (1.2)	3-5	56.4 (4.8)
10. Other	21.3 (1.4)	1-2	31.9 (2.1)	6.7 (0.9)	1-2	10.0 (1.3)	4.6 (0.7)	3-5	18.4 (2.8)	4.2 (0.7)	3-5	16.8 (2.8)

Note. $N = 808$. % = prevalence of exposure to the event. *SE* = standard error for population estimates. Number of exposures = average number of exposures to an event per capita. Number of exposures per 100 persons = the product of *% (SE)* and the median for the number of exposures. Direct exposure: Participation = personal experience of a traumatic event; Direct exposure: Witnessing = being a personal witness of a traumatic event; Indirect Exposure: Close other = learning that the traumatic event occurred to a close family member or friend; Indirect exposure: Job = job-related exposure to aversive details of the traumatic events.

sexual violence (12.8% vs. 2.3%; $\chi^2(1) = 30.66$, $p < .001$), whereas men more often reported physical assault (22.2% vs. 17.7%; $\chi^2(1) = 5.00$, $p < .05$), traffic accidents (50.3% vs. 39.8%; $\chi^2(1) = 9.16$, $p < .01$), and combat-related events (2.8% vs. 0.8%; $\chi^2(1) = 5.03$, $p < .05$). Full results are provided in Supplementary Material (S1).

Prevalence of PTSD. 23.8% of the sample met the PTSD screening threshold. All PTSD cases reported multimodal exposure. Their exposure diversity averaged 11.4 events, exceeding that of those below the threshold ($M = 6.20$; $F(1, 766) = 106.9$, $p < .001$). On average, the PTSD subsample experienced 1–2 trauma types per modality, totaling approximately 17 exposures per person.

Gender differentiated PTSD prevalence: women were more often screened positive than men (26.7% vs. 15.1%; $\chi^2(1) = 17.31$, $p < .001$). Logistic regression confirmed this association ($B = 0.74$, p < .001; OR = 2.09, 95% CI [1.47, 2.97]). Age and size of municipality were not significant predictors of PTSD (see Table 4).

Conditional PTSD risk by event type and modality. PTSD rates differed by event and modality (Table 5). Positive screens were most frequently observed among participants with personal war-related exposure (41.8%). In other modalities, witnessing sexual violence (55.0%) and indirect exposure to the sexual violence of a close other (52.9%) most frequently co-occurred with PTSD. In the occupational modality, indirect exposure to the sudden death of a close other had the highest PTSD rate (50.2%). Still, co-occurrence did not always translate into predictive power: logistic models indicated elevated risk only for specific events within each modality. For direct personal exposure: life-threatening illness/injury ($B = 0.71$, $p < .01$; OR = 2.04), and sexual assault ($B = 0.62$, $p < .05$; OR = 1.86); witnessed trauma: life-threatening illness or injury ($B = 0.92$, $p < .001$; OR = 2.52), and physical assault ($B = 0.71$, $p < .01$; OR = 2.03); indirect exposure via close other: life-threatening illness/injury ($B = 0.72$, $p < .01$; OR = 2.05), and physical assault ($B = 0.72$, $p < .01$; OR = 2.05); job-related indirect exposure: sudden death of a close other ($B = 0.97$, $p < .01$; OR = 2.63).

DISCUSSION

By examining trauma exposure across four distinct modalities in a national general-population sample, this study moves beyond the conventional focus on direct events to provide a more nuanced, population-level account of PTSD risk. Our central finding is that direct and indirect exposures are not isolated phenomena; they frequently co-occur, and their cumulative, multimodal burden is determinative for posttraumatic stress.

Table 4. Prevalence and conditional risk of PTSD by gender, age group, and size of municipality

			PTSD	
	n	**% *n (SE)***	**OR**	**95% CI**
Total	808	23.8 (1.5)	–	–
Gender				
Female	415	26.7 (2.1)	**2.09*** **	**[1.47, 2.97]**
Male (ref.)	393	15.1 (1.8)	1.00	–
$\chi^2(1)$			**17.31*** **	
Age (in years)				
18-24	108	24.0 (4.1)	1.01	[0.58, 1.77]
25-39	272	17.0 (2.3)	0.68	[0.43, 1.10]
40-54	218	22.7 (2.7)	1.02	[0.64, 1.61]
55-65 (ref.)	210	23.1 (2.8)	1.00	–
$\chi^2(3)$			4.20	
Size of municipality				
Rural Area	317	21.0 (2.3)	0.81	[0.46, 1.43]
Urban area				
< 20,000 inhabitants	193	20.2 (2.8)	0.85	[0.46, 1.56]
< 100,000 inhabitants	74	27.1 (5.0)	1.18	[0.58, 2.41]
< 500,000 inhabitants	132	15.6 (3.2)	0.61	[0.31, 1.21]
> 500,000 inhabitants (ref.)	92	23.3 (4.4)	1.00	–
$\chi^2(4)$			3.86	

Note. $N = 808$. %*n* = prevalence of exposure to traumatic events. *SE* = standard error for population estimates. OR = odd ratios, 95% CI = 95% confidence interval. χ^2 = chi square test for independence. * $p < .05$, ** $p < .01$, *** $p < .001$. Bold indicates significant results

Table 5. Conditional risk of PTSD by event type and exposure modality

	Direct exposure: Participation			Direct exposure: Witnessing			Indirect exposure: Close other			Indirect exposure: Job		
Traumtic event	**% *(SE)***	**OR**	**95% CI**	**% *(SE)***	**OR**	**95% CI**	**% *(SE)***	**OR**	**95% CI**	**% *(SE)***	**OR**	**95% CI**
1. Natural disaster	28.6 (3.5)	1.41	[0.92, 2.15]	30.0 (3.4)	1.24	[0.80, 1.91]	34.4 (3.9)	1.52	[0.95, 2.46]	36.5 (5.5)	1.02	[0.50, 2.06]
2. Transportation accident	25.3 (2.4)	1.19	[0.81, 1.74]	28.7 (2.6)	1.19	[0.79, 1.79]	33.3 (2.9)	1.29	[0.82, 2.03]	35.8 (4.7)	1.37	[0.76, 2.48]
3. Other serious accident	26.5 (4.4)	1.03	[0.62, 1.71]	28.0 (3.9)	0.73	[0.44, 1.22]	41.0 (4.7)	1.22	[0.70, 2.10]	41.8 (5.9)	1.34	[0.66, 2.72]
4. Physical assault	29.5 (3.8)	**1.58***	**[1.02, 2.44]**	38.1 (4.1)	**2.03****	**[1.27, 3.23]**	47.7 (4.8)	**2.05****	**[1.21, 3.48]**	45.0 (6.4)	1.05	[0.51, 2.18]
5. Sexual assault	35.2 (6.5)	1.86	[1.01, 3.42]	55.0 (12.4)	2.03	[0.65, 6.29]	52.9 (7.7)	1.31	[0.59, 2.92]	49.7 (10.5)	2.55	[0.86, 7.54]
6. Other life-threatening crime	25.8 (4.8)	0.95	[0.53, 1.70]	42.1 (7.4)	1.02	[0.48, 2.19]	36.1 (4.9)	0.60	[0.33, 1.10]	38.9 (8.3)	0.55	[0.20, 1.52]
7. Military combat or exposure to a war zone	41.8 (14.1)	1.58	[0.47, 5.34]	48.5 (14.1)	1.34	[0.39, 4.64]	43.5 (7.9)	0.83	[0.38, 1.80]	23.7 (10.0)	0.36	[0.08, 1.50]
8. Life-threatening illness or injury	28.2 (2.3)	**2.04****	**[1.34, 3.10]**	31.6 (2.5)	**2.52*****	**[1.63, 3.89]**	40.2 (3.0)	**2.05****	**[1.28, 3.28]**	46.8 (5.6)	1.55	[0.78, 3.09]
9. Sudden death of someone close	26.2 (2.2)	**1.52***	**[1.02, 2.26]**	31.4 (2.8)	**1.70***	**[1.13, 2.56]**	41.6 (3.0)	**3.94****	**[2.48, 6.25]**	50.2 (5.0)	**2.63****	**[1.40, 4.91]**
10. Other	35.4 (3.8)	**2.06****	**[1.36, 3.10]**	41.6 (7.3)	1.32	[0.68, 2.56]	49.6 (10.4)	1.24	[0.49, 3.13]	47.5 (11.5)	1.32	[0.46, 3.75]

Note. $N = 808$. % = prevalence of PTSD. *SE* = standard error for population estimates. OR = odd ratios, 95% CI = 95% confidence interval. Direct exposure: Participation = personal experience of a traumatic event; Direct exposure: Witnessing = being a personal witness of a traumatic event; Indirect Exposure: Close other = learning that the traumatic event occurred to a close family member or friend; Indirect exposure: Job = job-related exposure to aversive details of the traumatic events. Analyses were conducted while controlling for gender. *$p < .05$, **$p < .01$, ***$p < .001$. Bold indicates significant results

Indirect trauma exposure as a meaningful risk factor

The study confirms the pervasiveness of trauma exposure in the general population, with 95% of participants endorsing at least one traumatic experience. Beyond direct experiences, most respondents also reported indirect trauma exposure, which emerged as a meaningful correlate of PTSD: all individuals who screened positive for PTSD reported both direct and indirect events, and indirect exposures were associated with elevated conditional PTSD risk. In line with Even et al. (2024), we observed a specific pattern: while direct personal traumas were robustly associated with PTSD, individuals who learned of traumas secondhand also developed PTSD in notable numbers. These findings suggest that trauma should be conceptualized as a systemic phenomenon rather than merely an isolated individual event. This perspective implies a "ripple effect" where the psychological burden of a traumatic incident propagates through social networks and occupational environments, creating a shared traumatic reality for families and professionals (Baum, 2014; Ludick & Figley, 2017). This perspective carries significant clinical and political implications. Clinically, it suggests that standard intake assessments should routinely inquire about indirect exposures to capture the full etiology of patient distress. From a public health and policy standpoint, it highlights the urgent need to extend support beyond direct survivors to include informal caregivers, acknowledging that the costs of trauma are borne collectively by the society. Importantly, the observed impact of indirect exposure aligns with the DSM-5-TR inclusion of indirect trauma exposure modalities in Criterion A for PTSD, confirming that indirect traumatic experiences contribute to PTSD not only in high-risk groups but also in the general population (APA, 2022; Sprang & Steckler, 2023). Crucially, our study adhered strictly to the DSM-5-TR definitional boundary, excluding non-occupational media exposure. Therefore, the high prevalence rates observed here reflect actual interpersonal or professional burden, rather than generalized distress associated with news consumption. By comparison, the ICD-11's more concise definition raises the possibility that some such cases might not be recognized as PTSD under stricter interpretive criteria (WHO, 2022). However, looking beyond current diagnostic boundaries, and given emerging evidence that media exposure can independently elicit acute stress (Holman et al., 2014), future surveillance efforts should also consider monitoring this pathway alongside standard diagnostic protocols.

The role of event type in the context of exposure modality

Consistent with prior epidemiology, interpersonal violence—particularly sexual or physical assault—was the most predictive of PTSD across exposure modalities, even though it was not the most prevalent exposure in the studied population (Olff et al., 2025; Schincariol et al., 2024). This supports World Health Organization guidance that event content is critical for traumatization processes (Kessler et al., 2017; Koenen et al., 2017) and echoes the ICD-11 recognition that sustained interpersonal trauma may produce CPTSD (Cloitre et al., 2020; Karatzias et al., 2023). Our data further suggest that multimodal trauma exposures frequently co-occur with severe event types, amplifying PTSD risk in ways that single-index epidemiological approaches may underestimate. Highly traumatizing experiences can be encountered through multiple exposure modalities. In the present study, the overlap between direct and indirect exposures was substantial: nearly half of the total sample—and over 70% of those with PTSD—reported the same traumatic events across multiple trauma exposure modalities. Such multimodal exposure likely magnifies psychological impact through repeated confrontation with similar stressors (Schock et al., 2010; Butler et al., 2017). This pattern, well-documented in high-risk professions (Baum, 2014), is shown here to be prevalent in the general population.

More frequent but less extreme events—such as the sudden death or severe illness of a loved one—were also strongly associated with PTSD, especially when experienced across exposure modalities. This supports dose–response models in which cumulative exposure to common stressors, by virtue of repetition and relational closeness, exerts substantial effects on mental health (May & Wisco, 2016). In our study, cumulative trauma load appeared central: individuals with PTSD reported nearly three times as many traumatic events across exposure modalities as those without PTSD. We also observed the predictive power of the same event types across exposure modalities, which suggests that appraisal may matter more than context—aligning with evidence that subjective interpretation is central to traumatization in both direct and indirect exposure (Lesnierowska & Cieslak, 2021; Olff et al., 2025; Schincariol et al., 2024; Sprang & Steckler, 2023).

Sociodemographic patterns of trauma exposure and PTSD

Demographic analysis revealed distinct profiles of risk, particularly regarding gender. Women reported greater exposure to sexual violence, whereas men more often experienced physical assaults, transportation accidents, and combat-related events. Women were additionally more frequently indirectly exposed to traumatic events through close relationships with direct trauma survivors. This specific pattern likely reflects social roles: women are more often informal caregivers, a position linked to an elevated risk of vicarious traumatization (Swinkels et al., 2019). Conversely, men were more likely to encounter job-related indirect exposure, specifically involving violent acts—a result corresponding with mental health challenges in male-dominated high-risk professions such as uniformed services (Velasco et al., 2024). Yet women consistently exhibited higher conditional risk for PTSD, with odds of diagnosis approximately twice those of men. This pattern replicates robust global evidence (Kessler et al., 2017; Olff et al., 2025; Valentine et al., 2019) and suggests that these differential social roles—informal caregiving versus professional duty—along with variations in trauma appraisals may amplify women's vulnerability to

both direct and indirect events (Swinkels et al., 2019). It also aligns with ICD-11 research showing higher CPTSD prevalence among women exposed to relational trauma (Hyland et al., 2021).

In contrast to these distinct gender profiles, our findings regarding age revealed a deviation from the classic cumulative model, where trauma burden is expected to rise linearly across the lifespan (Benjet et al., 2016). In our data, such a linear trajectory was evident only for time-dependent modalities (i.e., occupational exposure), whereas direct trauma exposure exhibited uniformly high prevalence already in the youngest cohort. Consequently, age did not emerge as a predictor of PTSD status. This absence of a significant gradient appears driven by converging methodological and psychological factors. First, the high baseline of direct exposure in young adults suggests that significant exposure burden is acquired early in adulthood rather than accruing gradually. Second, this plateau likely reflects retrospective reporting dynamics: older adults might underreport distal events due to memory decay or shifts in subjective appraisal (Hardt & Rutter, 2004; Ogle et al., 2013), whereas younger adults may report recent stressors with greater acuity. Furthermore, recruitment patterns may have contributed to this uniformity, as it is likely that younger individuals with personal trauma histories were disproportionately motivated to engage with the study compared to their non-exposed peers, thereby elevating the baseline in the youngest cohort.

Population-Specific Context

Consistent with prior global surveys (Benjet et al., 2016; Kessler et al., 2017; Olff et al., 2025), traumatic experiences were nearly universal in our sample. While this rate appears exceptionally high, it is comparable to estimates from other specific populations identified in the World Mental Health Survey, such as pre-war Ukraine (84.6%), Peru (83.1%), and the United States (82.7%) (Benjet et al., 2016). In contrast, estimates for Western Europe have historically been lower, averaging around 60% (Darves-Bornoz et al., 2008). This discrepancy likely reflects not only genuine population differences but also methodological factors: studies utilizing comprehensive checklists that account for multiple exposure modalities—as done here—typically yield higher prevalence rates due to increased sensitivity and the cumulative capture of indirect events (Rubin & Feeling, 2013; Takarangi et al., 2018). Assessing all four exposure modalities concurrently, we found direct personal trauma and in-person witnessing to be the most common, but with sizable indirect exposures via close others and in occupational contexts. These patterns underscore the value of explicitly capturing indirect modalities in population epidemiology, while noting that multimodal, event-by-event assessment may elevate prevalence relative to studies that solicit a single index trauma or use abbreviated checklists.

Our results align with previous Polish research (Rzeszutek et al., 2023a; Szumial, 2021) demonstrating that trauma exposure exceeded most Western European estimates (Darves-Bornoz et al., 2008) and that PTSD prevalence surpassed rates reported in neighboring countries (e.g. Germany 4.7%, Sweden 5.6%; Pettrich et al., 2025; Frans et al., 2005). Beyond the historical contributors (i.e., the legacy of collective trauma), cultural norms of expression likely play a moderating role. Social psychological research indicates that Polish culture is characterized by a "norm of negativity" or "culture of complaining" (Wojciszke, 2004), where expressing distress and dissatisfaction serves as a culturally sanctioned mechanism for social bonding. This tendency towards negative self-presentation may inflate scores on self-report measures of distress—including PTSD checklists—resulting in prevalence estimates that exceed those derived from clinician-administered interviews, which focus more strictly on functional impairment (Engelhard et al., 2007). Thus, the high rates observed here should be interpreted as a combination of genuine high trauma burden and a culturally specific expressive style.

Crucially, apart from these socio-cultural characteristics, the timing of data collection in 2017 provides a critical interpretative context. Our results capture the psychotraumatological landscape prior to the major global and regional upheavals of the last decade. Recent evidence indicates that the COVID-19 pandemic and the war in Ukraine have subsequently intensified traumatic stress and psychopathology in the Polish population (Chudzicka-Czupała et al., 2023; Dragan et al., 2025). Consequently, the prevalence rates reported here serve as a vital anchor. This baseline is essential not only for identifying structural patterns of trauma exposure independent of acute situational stressors but also for precisely quantifying the magnitude of epidemiological shifts triggered by these large-scale crises. Taken together, our evidence suggests that cultural–historical context shapes how trauma is encountered, internalized, and reported across exposure modalities.

Implications for definitions and epidemiology of trauma

By documenting the epidemiological weight of indirect exposures and the salience of event content, this study contributes to ongoing definitional debates about what may count as trauma. While DSM-5-TR explicitly includes several indirect routes, ICD-11 places greater emphasis on extreme threat and leaves some indirect routes to clinical interpretation (APA, 2022; WHO, 2019). Our study illustrates the tension between inclusivity and diagnostic precision. From an epidemiological perspective, excluding indirect exposures risks underestimating trauma's public-health burden, particularly in contexts of cumulative and severe events. At the same time, concerns about diagnostic inflation when common experiences are categorized as trauma, which may blur distinctions between PTSD and broader stress reactions remain salient (Marx et al., 2024; McNally, 2009). Our findings do not resolve this debate; rather, they indicate that links between indirect exposures and PTSD risk are observable in the general population and therefore warrant systematic

inclusion and careful operationalization in population surveys. Cross-national studies are needed to determine whether these associations generalize across settings and measurement frameworks.

Limitations

Several limitations should be acknowledged. The study's cross-sectional design precludes inferences about the temporal sequence of trauma exposure and PTSD symptoms. Furthermore, the reliance on retrospective self-report for both constructs introduces potential biases. The detailed nature of the trauma checklist may be subject to recall bias and could inflate prevalence estimates (Takarangi, 2018). Moreover, the reliance on a self-report PTSD measure (PCL-5) rather than a structured clinical interview constitutes a significant limitation. While the PCL-5 is a validated screening tool, empirical evidence suggests that self-report measures typically yield prevalence estimates significantly higher than diagnostic interviews (Engelhard et al., 2007), raising the risk of diagnostic overestimation in the present sample. Finally, limitations in measurement precision should be noted. Specifically, PTSD symptoms were assessed using a composite-event instruction. Although participants assessed symptoms immediately after identifying specific events, this approach captures the cumulative impact of stressors rather than anchoring symptoms to a single index trauma. While this aligns with our focus on multimodal exposure, empirical evidence suggests that such cumulative strategies typically yield higher prevalence estimates than the "worst-event" paradigm (Kilpatrick et al., 2013). Consequently, the high rates observed here should be interpreted with caution when compared to studies utilizing strictly event-specific diagnostic criteria. Additionally, the exposure assessment lacked fine-grained indices of severity or frequency, and the broad operationalization of certain events may have contributed to higher reported rates of both exposure and probable PTSD (APA, 2022).

Regarding sampling characteristics, while the dataset mirrors national distributions for age, gender, and size of municipality, we did not account for specific local variations in exposure to natural hazards (e.g., flood risk zones). Consequently, we cannot rule out that residents of high-risk areas were overrepresented due to self-selection, potentially inflating estimates of direct exposure. However, high prevalence rates may also partially reflect the inclusion of indirect exposure (e.g., learning about a close one's trauma), which allows for exposure even outside immediate high-risk zones. Furthermore, consistent with typical online panel characteristics, individuals with higher education were overrepresented relative to the general population. Although education level was recorded, the skew towards higher attainment limits our ability to reliably generalize findings regarding the socioeconomic gradient of PTSD risk. Finally, despite the use of a stratified national sample, biases related to the study design cannot be entirely ruled out. Specifically, self-selection and topic-related attrition may have occurred, thus it is possible that individuals with significant trauma histories were more inclined to participate, while others may have opted out or discontinued due to the sensitive nature of the topic. Crucially, the non-random recruitment procedure precludes the definitive assessment of a potential interaction between the decision to participate and the participants' actual level of traumatization or PTSD symptoms.

CONCLUSIONS

This study demonstrates that a comprehensive understanding of population-level trauma requires moving beyond the prevailing focus on direct traumatic events. We establish that indirect exposures are prevalent and consequential, and that the etiology of PTSD is often rooted in the cumulative burden of repeated, overlapping exposures across multiple modalities. This finding provides a strong rationale for systematically including these pathways in epidemiological surveillance and clinical assessment, contingent on rigorous operationalization to prevent diagnostic inflation. Moreover, by delineating gendered pathways of exposure and risk shaped by historical-cultural context, our work underscores that trauma is a heterogeneous experience. Ultimately, mapping the full spectrum of traumatic exposure is essential for refining public health approaches and the fundamental conceptualization of posttraumatic stress.

COMPLIANCE WITH ETHICAL STANDARDS

Ethical approval for the study was granted by the institutional review board of SWPS University (Decision No. 23/2017).

Competing Interests: None.

Availability of Data and Materials: Data are available in the OSF repository at http://doi.org/10.17605/OSF.IO/N4Y8B.

Authors' contributions: All authors contributed to the study concept and design, data collection and analysis, manuscript preparation, and approved the final manuscript.

REFERENCES

American Psychiatric Association (2022). *Diagnostic and statistical manual of mental disorders* (5th ed., text rev.). https://doi.org/10.1176/appi.books.9780890425787

Atwoli, L., Stein, D. J., King, A., Petukhova, M., Aguilar-Gaxiola, S., Alonso, J., Bromet, E. J., de Girolamo, G., Demyttenaere, K., Florescu, S., Haro, J. M., Karam, E. G., Kawakami, N., Lee, S., Lépine, J. P., Navarro-Mateu, F., O'Neill, S., Pennell, B. E., Piazza, M., ... Kessler, R. C. (2017). Posttraumatic stress disorder associated with unexpected death of a loved one: Cross-national findings from the World Mental Health Surveys. *Depression and Anxiety, 34*(4), 315–326. https://doi.org/10.1002/da.22579

Baum, N. (2014). Professionals' double exposure in the shared traumatic reality of wartime: Contributions to professional growth and stress. *British Journal of Social Work, 44*(8), 2113–2134. https://doi.org/10.1093/bjsw/bct085

Benjet, C., Bromet, E., Karam, E. G., Kessler, R. C., McLaughlin, K. A., Ruscio, A. M., Shahly, V., Stein, D. J., Petukhova, M., Hill, E. D., Alonso, J., Atwoli, L., Bunting, B., Bruffaerts, R., Caldas-de-Almeida, J. M., de Girolamo, G., Florescu, S., Gureje, O., Huang, Y.,

... Koenen, K. C. (2016). The epidemiology of traumatic event exposure worldwide: Results from the World Mental Health Survey Consortium. *Psychological Medicine, 46*(2), 327–343. https://doi.org/10.1017/S0033291715001981

Boals, A. (2018). Trauma in the eye of the beholder: Objective and subjective definitions of trauma. *Journal of Psychotherapy Integration, 28*(1), 77. https://doi.org/10.1037/int0000050

Butler, L. D., Carello, J., & Maguin, E. (2017). *Trauma, stress, and self-care in clinical training:* Predictors of burnout, decline in health status, secondary traumatic stress symptoms, and compassion satisfaction. *Psychological Trauma*. https://doi.org/10.1037/tra0000187

Carpiniello, B. (2023). The mental health costs of armed conflicts—a review of systematic reviews conducted on refugees, asylum-seekers and people living in war zones. *International journal of environmental research and public health*, *20*(4), 2840. https://doi.org/10.3390/ijerph20042840

Cénat, J. M., Blais-Rochette, C., Kokou-Kpolou, C. K., Noorishad, P. G., Mukunzi, J. N., McIntee, S. E., Dalexis, R. D., Goulet, M. A., & Labelle, P. R. (2020). Prevalence of symptoms of depression, anxiety, insomnia, posttraumatic stress disorder, and psychological distress among populations affected by the COVID-19 pandemic: A systematic review and meta-analysis. *Psychiatry Research, 295*, 113599. https://doi.org/10.1016/j.psychres.2020.113599

Chudzicka-Czupala, A., Hapon, N., Chiang, S. K., Żywiołek-Szeja, M., Karamushka, L., Lee, C. T., Grabowski, D., Paliga, M., Rosenblat, J. D., Ho, R., McIntyre, R. S., & Chen, Y. L. (2023). Depression, anxiety and post-traumatic stress during the 2022 Russo-Ukrainian war, a comparison between populations in Poland, Ukraine, and Taiwan. *Scientific Reports, 13*(1), 3602. https://doi.org/10.1038/s41598-023-28729-3

Cieślak, R., Anderson, V., Bock, J., Moore, B. A., Peterson, A. L., & Benight, C. C. (2013). Secondary traumatic stress among mental health providers working with the military: Prevalence and its work- and exposure-related correlates. *The Journal of Nervous and Mental Disease, 201*(11), 917–925. https://doi.org/10.1097/NMD.0000000000000034

Cloitre, M. (2021). Complex PTSD: Assessment and treatment. *European Journal of Psychotraumatology, 12*(sup1), 1866423. https://doi.org/10.1080/20008198.2020.1866423

Darves-Bornoz, J. M., Alonso, J., de Girolamo, G., de Graaf, R., Haro, J. M., Kovess-Masfety, V., Lépine, J. P., Nachbaur, G., Negre-Pages, L., Vilagut, G., Gasquet, I., & ESEMeD/MHEDEA 2000 Investigators. (2008). Main traumatic events in Europe: PTSD in the European study of the epidemiology of mental disorders survey. *Journal of Traumatic Stress, 21*(5), 455–462. https://doi.org/10.1002/jts.20357

Dragan, M., Grajewski, P., & Shevlin, M. (2021). Adjustment disorder, traumatic stress, depression and anxiety in Poland during an early phase of the COVID-19 pandemic. *European Journal of Psychotraumatology, 12*(1), 1860356. https://doi.org/10.1080/20008198.2020.1860356

Dragan, M., Szumiał, S., Grajewski, P., Kluska, J., Przewłoka, P., & Lotzin, A. (2025). Adjustment disorder, PTSD, and their predictors throughout the COVID-19 pandemic: results from the longitudinal ESTSS ADJUST study in Poland. *Current Psychology*, *44*(23), 18534-18542. https://doi.org/10.1007/s12144-025-08388-5

Ehlers, A., & Clark, D. M. (2000). A cognitive model of posttraumatic stress disorder. *Behaviour research and therapy, 38*(4), 319-345. https://doi.org/10.1016/s0005-7967(99)00123-0

Engelhard, I. M., Arntz, A., & Van den Hout, M. A. (2007). Low specificity of symptoms on the post-traumatic stress disorder (PTSD) symptom scale: a comparison of individuals with PTSD, individuals with other anxiety disorders and individuals without psychopathology. *British Journal of Clinical Psychology, 46*(4), 449-456. https://doi.org/10.1348/014466507X206883

Even, D., Cohen, G. H., Wang, R., & Galea, S. (2024). The cumulative contribution of direct and indirect traumas to the production of PTSD. *PLOS ONE, 19*(8), e0307593. https://doi.org/10.1371/journal.pone.0307593

Frans, Ö., Rimmö, P. A., Åberg, L., & Fredrikson, M. (2005). Trauma exposure and post-traumatic stress disorder in the general population. *Acta Psychiatrica Scandinavica, 111*(4), 291–299. https://doi.org/10.1111/j.1600-0447.2004.00463.x

Garson, G. D. (2015). *Missing values analysis and data imputation*. Statistical Associates Publishers.

Groenwold, R., Donders, A., Roes, K., Harrell, F. E., Jr., & Moons, K. (2012). Dealing with missing outcome data in randomized trials and observational studies. *American Journal of Epidemiology, 175*, 210–217. https://doi.org/10.1093/aje/kwr302

Hardt, J., & Rutter, M. (2004). Validity of adult retrospective reports of adverse childhood experiences: Review of the evidence. *Journal of Child Psychology and Psychiatry, 45*(2), 260–273. https://doi.org/10.1111/j.1469-7610.2004.00218.x

Hatch, S. L., & Dohrenwend, B. P. (2007). *Distribution of traumatic and other stressful life events by race/ethnicity, gender, SES and age: A review of the research*. *American Journal of Community Psychology, 40*(3–4), 313–332. https://doi.org/10.1007/s10464-007-9134-z

Health–Europe, The Lancet Regional. (2025). Intergenerational trauma in Poland. *The Lancet Regional Health – Europe, 54*, 101379. https://doi.org/10.1016/j.lanepe.2024.101379

Henderson, A., Jewell, T., Huang, X., & Simpson, A. (2025). *Personal trauma history and secondary traumatic stress in mental health professionals: A systematic review*. *Journal of Psychiatric and Mental Health Nursing, 32*(1), 13–30. https://doi.org/10.1111/jpm.13082

Holman, E. A., Garfin, D. R., & Silver, R. C. (2014). Media's role in broadcasting acute stress following the Boston Marathon bombings. *Proceedings of the National Academy of Sciences, 111*(1), 93–98. https://doi.org/10.1073/pnas.1316265110

Holmes, S. C., Austin, A. E., & Smith, M. V. (2022). *Understanding the association between material hardship and posttraumatic stress disorder: A test of the social selection and social causation hypotheses and an exploration of gender differences*. *Social Psychiatry and Psychiatric Epidemiology, 57*(1), 57–66. https://doi.org/10.1007/s00127-021-02162-1

Hyland, P., Vallières, F., Cloitre, M., Ben-Ezra, M., Karatzias, T., Olff, M., Murphy, J., & Shevlin, M. (2021). *Trauma, PTSD, and complex PTSD in the Republic of Ireland: Prevalence, service use, comorbidity, and risk factors*. *Social Psychiatry and Psychiatric Epidemiology, 56*(4), 649–658. https://doi.org/10.1007/s00127-020-01912-x

Kaniasty, K. (2012). Predicting social psychological well-being following trauma: The role of postdisaster social support. *Psychological Trauma: Theory, Research, Practice, and Policy, 4*(1), 22–33. https://doi.org/10.1037/a0021412

Karatzias, T., Bohus, M., Shevlin, M., Hyland, P., Bisson, J. I., Roberts, N., & Cloitre, M. (2023). *Distinguishing between ICD-11 complex post-traumatic stress disorder and borderline personality disorder: Clinical guide and recommendations for future research*. *The British Journal of Psychiatry, 223*(3), 403–406. https://doi.org/10.1192/bjp.2023.80

Kessler, R. C., Aguilar-Gaxiola, S., Alonso, J., Benjet, C., Bromet, E. J., Cardoso, G., Demyttenaere, K., de Girolamo, G., Gureje, O., Haro, J. M., Huang, Y., Karam, E. G., Kawakami, N., Lee, S., Lépine, J. P., Levinson, D., Navarro-Mateu, F., Pennell, B. E., Piazza, M., ... Koenen, K. C. (2017). Trauma and PTSD in the WHO World Mental Health Surveys. *European Journal of Psychotraumatology, 8*(sup5), 1353383. https://doi.org/10.1080/20008198.2017.1353383

Kilpatrick, D. G., Resnick, H. S., Milanak, M. E., Miller, M. W., Keyes, K. M., & Friedman, M. J. (2013). National estimates of exposure to traumatic events and PTSD prevalence using DSM-IV and DSM-5 criteria. *Journal of Traumatic Stress, 26*(5), 537–547. https://doi.org/10.1002/jts.21848

King, D. W., King, L. A., McArdle, J. J., Grimm, K., Jones, R. T., & Ollendick, T. H. (2006). Characterizing time in longitudinal trauma research. *Journal of Traumatic Stress, 19*(2), 205–215. https://doi.org/10.1002/jts.20112

Knipscheer, J., Sleijpen, M., Frank, L., de Graaf, R., Kleber, R. J., Ten Have, M., & Dückers, M. L. (2020). *Prevalence of potentially*

traumatic events, other life events and subsequent reactions indicative for posttraumatic stress disorder in the Netherlands: A general population study based on the Trauma Screening Questionnaire. *International Journal of Environmental Research and Public Health, 17*(5), 1725. https://doi.org/10.3390/ijerph17051725

Koenen, K. C., Ratanatharathorn, A., Ng, L., McLaughlin, K. A., Bromet, E. J., Stein, D. J., Karam, E. G., Ruscio, A. M., Benjet, C., Scott, K. M., Atwoli, L., Petukhova, M., Lim, C. C. W., Aguilar-Gaxiola, S., Al-Hamzawi, A., Alonso, J., Bunting, B., Ciutan, M., de Girolamo, G., ... Kessler, R. C. (2017). Posttraumatic stress disorder in the World Mental Health Surveys. *Psychological Medicine, 47*(13), 2260–2274. https://doi.org/10.1017/S0033291717000708

Lesnierowska, M., & Cieślak, R. (2021). Psychological consequences of indirect traumatic experiences. In M. Dragan & M. Rzeszutek (Eds.), *Studies on psychological trauma in Poland* (pp. 107–133). Scholar Scientific ISBN: 978-83-66470-69-9

Lis-Turlejska, M., Szumial, S., Drapala, I. (2018). Posttraumatic stress symptoms among Polish World War II survivors: The role of social acknowledgement. *European Journal of Psychotraumatology, 9*(1). https://doi.org/10.1080/20008198.2018.1423831

Little, R. J. A., & Rubin, D. B. (2002). *Statistical analysis with missing data* (2nd ed.). Wiley-Interscience. https://doi.org/10.1002/9781119013563

Lotzin, A., Krause, L., Acquarini, E., Ajdukovic, D., Anastassiou-Hadjicharalambous, X., Ardino, V., Bondjers, K., Böttche, M., Dragan, M., Figueiredo-Braga, M., Geleželytė, O., Grajewski, P., Javakhishvili, J. D., Kazlauskas, E., Lenferink, L., Lioupi, C., Lueger-Schuster, B., Mooren, T., Sales, L., ... ADJUST Study Consortium (2022). Risk and protective factors for posttraumatic stress disorder in trauma-exposed individuals during the COVID-19 pandemic – findings from a pan-European study. *European Journal of Psychotraumatology, 13*(2), 2138099. https://doi.org/10.1080/20008066.2022.2138099

Ludick, M., & Figley, C. R. (2017). *Toward a mechanism for secondary trauma induction and reduction: Reimagining a theory of secondary traumatic stress*. *Traumatology, 23*(1), 112–119. https://doi.org/10.1037/trm0000096

Marx, B. P., Hall-Clark, B., Friedman, M. J., Holtzheimer, P., & Schnurr, P. P. (2024). *The PTSD Criterion A debate: A brief history, current status, and recommendations for moving forward*. *Journal of Traumatic Stress, 37*(1), 5–15. https://doi.org/10.1002/jts.23007

May, C. L., & Wisco, B. E. (2016). *Defining trauma: How level of exposure and proximity affect risk for posttraumatic stress disorder*. *Psychological Trauma*. https://doi.org/10.1037/tra0000077

McNally, R. J. (2009). Can we fix PTSD in DSM-V? *Depression and Anxiety, 26*(7), 597–600. https://doi.org/10.1002/da.20586 Melinte, B. M., Turliuc, M. N., & Măirean, C. (2023). *Secondary traumatic stress and vicarious posttraumatic growth in healthcare professionals: A meta-analysis*. *Clinical Psychology*. https://doi.org/10.1037/cps0000159

Mew, E. J., Koenen, K. C., & Lowe, S. R. (2022). *Trauma as a public health issue: Epidemiology of trauma and trauma-related disorders*. In U. Schnyder & M. Cloitre (Eds.), *Evidence-based treatments for trauma-related psychological disorders: A practical guide for clinicians* (pp. 13–40). Springer International Publishing. https://doi.org/10.1007/978-3-030-97802-0_2

Ng, L. C., Stevenson, A., Kalapurakkel, S. S., Hanlon, C., Seedat, S., Harerimana, B., Chiliza, B., & Koenen, K. C. (2020). *National and regional prevalence of posttraumatic stress disorder in sub-Saharan Africa: A systematic review and meta-analysis*. *PLOS Medicine, 17*(5), e1003090. https://doi.org/10.1371/journal.pmed.1003090

Ogle, C. M., Rubin, D. C., & Siegler, I. C. (2013). The impact of the developmental timing of trauma exposure on PTSD symptoms and psychosocial functioning among older adults. *Developmental Psychology, 49*(11), 2191–2200. https://doi.org/10.1037/a0031985

Olff, M. (2017). Sex and gender differences in post-traumatic stress disorder: an update. *European journal of psychotraumatology*, *8*(sup4), 1351204. https://psycnet.apa.org/doi/10.1080/20008198.2017.1351204

Olff, M., Hein, I., Amstadter, A. B., Armour, C., Skogbrott Birkeland, M., Bui, E., Cloitre, M., Ehlers, A., Ford, J. D., Greene, T., Hansen, M., Harnett, N. G., Kaminer, D., Lewis, C., Minelli, A., Niles, B., Nugent, N. R., Roberts, N., Price, M., ... Vujanovic, A. A. (2025). *The impact of trauma and how to intervene: A narrative review of psychotraumatology over the past 15 years*. *European Journal of Psychotraumatology, 16*(1), 2458406. https://doi.org/10.1080/20008066.2025.2458406

Pettrich, A., Nesterko, Y., & Glaesmer, H. (2025). The prevalence of traumatic experiences and PTSD according to DSM-5 and ICD-11 in the German general population. *Epidemiology and Psychiatric Sciences, 34*, e44. https://doi.org/10.1017/S2045796025100164

Pfefferbaum, B., Newman, E., Nelson, S. D., Nitiéma, P., Pfefferbaum, R. L., & Rahman, A. (2014). Disaster media coverage and psychological outcomes: descriptive findings in the extant research. *Current psychiatry reports*, *16*(9), 464. https://doi.org/10.1007/s11920-014-0464-x

Rutkowski, K., Dembinska, E. (2016). Powojenne badania stresu pourazowego w Krakowie. Badania po 1989 roku. *Psychiatria Polska, 22*. http://dx.doi.org/10.12740/PP/OnlineFirst/43659

Rzeszutek, M., Dragan, M., Lis-Turlejska, M., Schier, K., Holas, P., Drabarek, K., Van Hoy, A., Pięta, M., Poncyliusz, C., Michałowska, M., Wdowczyk, G., Borowska, N., & Szumiał, S. (2023a). *Exposure to self-reported traumatic events and probable PTSD in a national sample of Poles: Why does Poland's PTSD prevalence differ from other national estimates? PLOS ONE, 18*(7), e0287854. https://doi.org/10.1371/journal.pone.0287854

Rzeszutek, M., Dragan, M., Lis-Turlejska, M., Schier, K., Holas, P., Pięta, M., Van Hoy, A., Drabarek, K., Poncyliusz, C., Michałowska, M., Wdowczyk, G., Borowska, N., & Szumiał, S. (2023b). Long-lasting effects of World War II trauma on PTSD symptoms and embodiment levels in a national sample of Poles. *Scientific Reports, 13*(1), 17222. https://doi.org/10.1038/s41598-023-44300-6

Saraiya, T. C., Bauer, A. G., Banks, D. E., Brown, D. G., Jarnecke, A. M., Ebrahimi, C. T., & Bernard, D. L. (2025). Are we gatekeeping trauma? A conceptual model to expand criterion A for invisible, identity-based, and systemic traumas. *Social Science & Medicine, 118*, 118090. https://doi.org/10.1016/j.socscimed.2025.118090

Schein, J., Houle, C., Urganus, A., Cloutier, M., Patterson-Lomba, O., Wang, Y., King, S., Levinson, W., Guérin, A., Lefebvre, P., & Davis, L. L. (2021). *Prevalence of post-traumatic stress disorder in the United States: A systematic literature review*. *Current Medical Research and Opinion, 37*(12), 2151–2161. https://doi.org/10.1080/03007995.2021.1978417

Schincariol, A., Orrù, G., Otgaar, H., Sartori, G., & Scarpazza, C. (2024). *Posttraumatic stress disorder (PTSD) prevalence: An umbrella review*. *Psychological Medicine, 1*–14. https://doi.org/10.1017/S0033291724002319

Schock, K., Rosner, R., Wenk-Ansohn, M., & Knaevelsrud, C. (2010). *Retraumatization: A conceptional approach*. *Psychotherapie, Psychosomatik, Medizinische Psychologie, 60*(7), 243–249. https://doi.org/10.1055/s-0030-1248268

Sprang, G., & Steckler, Z. (2023). *Traumatic stress symptom expression following indirect exposure: A multidisciplinary investigation*. *Traumatology, 29*(2), 224–232. https://doi.org/10.1037/trm0000386

Statistics Poland (2016). *Statistical yearbook of the Republic of Poland 2016*. https://stat.gov.pl/obszary-tematyczne/roczniki-statystyczne/roczniki-statystyczne/rocznik-statystyczny-rzeczypospolitej-polskiej-2016,2,16.html

Swinkels, J., van Tilburg, T. V., Verbakel, E., & Broese van Groenou, M. (2019). *Explaining the gender gap in the caregiving burden of partner caregivers*. *The Journals of Gerontology*. https://doi.org/10.1093/geronb/gbx036

Szumiał, S. (2021). Meta-analysis of PTSD prevalence in Poland based on empirical studies. In M. Dragan & M. Rzeszutek (Eds.), *Studies on psychological trauma in Poland* (pp. 41–52). Scholar Scientific ISBN: 978-83-66470-69-9.

Takarangi, M. K. T., Oulton, J. M., & Strange, D. (2018). Explaining memory amplification: Is it all about the test format? *Clinical Psychological Science, 6*(3), 394–407. https://doi.org/10.1177/2167702617744326

Tolin, D. F., & Foa, E. B. (2008). Sex differences in trauma and posttraumatic stress disorder: a quantitative review of 25 years of research. *Psychological Bulletin, 132*(6), 959–992. https://doi.org/10.1037/0033-2909.132.6.959

Valentine, S. E., Marques, L., Wang, Y., Ahles, E. M., De Silva, L. D., & Alegría, M. (2019). Gender differences in exposure to potentially traumatic events and diagnosis of posttraumatic stress disorder (PTSD) by racial and ethnic group. *General Hospital Psychiatry, 61*, 60–68. https://doi.org/10.1016/j.genhosppsych.2019.10.008

Velasco, J., Salido-Santos, E., & Sanmartín, F. J. (2024). Beyond the uniform: impact of indirect trauma on Spanish police officers. *Journal of Police and Criminal Psychology*, *39*(2), 280-288. https://psycnet.apa.org/doi/10.1007/s11896-023-09630-1

Wang, Y. R., Ford, M. T., Credé, M., Harms, P. D., & Lester, P. B. (2023). A meta-analysis on the crossover of workplace traumatic stress symptoms between partners. *Journal of Applied Psychology, 108*(7), 1157–1189. https://doi.org/10.1037/apl0001069

Watson, P. (2019). PTSD as a public mental health priority. *Current Psychiatry Reports, 21*(7), 61. https://doi.org/10.1007/s11920-019-1032-1

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). *Scale available from the National Center for PTSD at www.ptsd.va.gov.*

Wojciszke, B. (2004). The negative social world: The Polish culture of complaining. *International Journal of Sociology, 34*(4), 38-59. https://doi.org/10.1080/00207659.2004.11043140

World Health Organization. (2022). *ICD-11: International Classification of Diseases* (11th revision). https://icd.who.int/

Table S1 [SUPPLEMENTARY MATERIAL].
Prevalence of traumatic events by exposure modality and gender

	Traumatic events prevalence							
	Direct exposure: Participation		**Direct exposure: Witnessing**		**Indirect exposure: Close other**		**Indirect exposure: Job**	
Traumatic event	**Female % *(SE)***	**Male% *(SE)***	**Female % *(SE)***	**Male% *(SE)***	**Female % *(SE)***	**Male% *(SE)***	**Female % *(SE)***	**Male% *(SE)***
1. Natural disaster	22.7 (2.1)	23.9 (2.2)	24.3 (2.2)	25.2 (2.3)	23.1 (2.2)	17.9 (2.1)	6.8 (1.2)	13.7 (1.8)
	$\chi2(1) = 0.09$		$\chi2(1) = 0.01$		**$\chi2(1) = 4.84$***		**$\chi2(1) = 8.23$****	
2. Transportation accident	39.8 (2.5)	50.3 (2.6)	35.4 (2.4)	45.1 (2.6)	35.3 (2.4)	36.2 (2.5)	8.5 (1.3)	20.1 (2.1)
	$\chi2(1) = 9.16$**		**$\chi2(1) = 7.63$****		$\chi2(1) = 0.01$		**$\chi2(1) = 17.45$*****	
3. Other serious accident	11.5 (1.6)	16.4 (1.9)	14.8 (1.8)	23.1 (2.2)	14.8 (1.8)	15.6 (2.0)	5.1 (1.1)	13.4 (1.8)
	$\chi2(1) = 2.68$		**$\chi2(1) = 8.98$****		$\chi2(1) = 0.00$		**$\chi2(1) = 15.73$*****	
4. Physical assault	17.7 (2.0)	22.9 (2.2)	18.1 (2.0)	20.3 (2.1)	14.7 (1.8)	14.8 (1.9)	6.0 (1.2)	10.0 (1.6)
	$\chi2(1) = 5.0$*		$\chi2(1) = 1.55$		$\chi2(1) = 0.01$		**$\chi2(1) = 4.45$***	
5. Sexual assault	12.8 (1.7)	2.3 (0.8)	2.6 (0.9)	1.7 (0.6)	7.0 (1.3)	4.4 (1.1)	2.4 (0.8)	3.2 (0.8)
	$\chi2(1) = 30.66$***		$\chi2(1) = 0.02$		$\chi2(1) = 2.22$		$\chi2(1) = 1.27$	
6. Other life-threatening crime	11.1 (1.6)	9.8 (1.6)	4.5 (1.0)	7.6 (1.4)	13.1 (1.7)	12.7 (1.7)	2.2 (0.8)	6.7 (1.3)
	$\chi2(1) = 1.23$		$\chi2(1) = 2.65$		$\chi2(1) =0 .01$		**$\chi2(1) = 12.30$*****	
7. Military combat or exposure to a war zone	0.8 (0.5)	2.8 (0.9)	0.5 (0.3)	2.8 (0.9)	5.9 (1.2)	4.2 (1.0)	1.4 (0.5)	3.2 (0.9)
	$\chi2(1) = 5.03$*		**$\chi2(1) = 5.05$***		$\chi2(1) = 1.54$		$\chi2(1) = 1.63$	
8. Life-threatening illness or injury	59.3 (2.6)	49.3 (2.6)	48.2 (2.5)	45.5 (2.6)	41.5 (2.5)	30.7 (2.4)	10.0 (1.5)	11.3 (1.7)
	$\chi2(1) = 11.28$**		$\chi2(1) = 1.04$		**$\chi2(1) = 11.13$****		$\chi2(1) = 0.32$	
9. Sudden death of someone close	59.8 (2.5)	53.8 (2.6)	40.5 (2.5)	35.4 (2.5)	43.1 (2.5)	29.7 (2.4)	13.1 (1.7)	14.5 (1.9)
	$\chi2(1) = 4.06$*		$\chi2(1) = 2.58$		**$\chi2(1) = 19.17$*****		$\chi2(1) = 0.40$	
10. Other	25.2 (2.2)	16.8 (2.0)	7.6 (1.4)	5.1 (1.1)	4.6 (1.1)	2.1 (1.07)	1.8 (0.7)	3.0 (0.8)
	$\chi2(1) = 7.53$**		$\chi2(1) = 0.69$		$\chi2(1) = 1.69$		$\chi2(1) = 2.79$	

Note. $N = 808$. % = prevalence of exposure to the event. *SE* = standard error for population estimates. χ^2 = chi square test for independence. Direct exposure: Participation = personal experience of a traumatic event; Direct exposure: Witnessing = being a personal witness of a traumatic event; Indirect Exposure: Close other = learning that the traumatic event occurred to a close family member or friend; Indirect exposure: Job = job-related exposure to aversive details of the traumatic events. *$p < .05$, **$p < .01$, ***$p < .001$. Bold indicates significant results.