Prevalence of the Dissociative Subtype of Post-Traumatic Stress Disorder: A Systematic Review and Meta-Analysis

Authors:

William F. White[1]

Aaron Burgess[1]

Tim Dalgleish[2]

Sarah Halligan[3]

Rachel Hiller[4,5]

Anna Oxley[6]

Patrick Smith[7,8]

Richard Meiser-Stedman[1]

Word Count: 4905

[1]Department of Clinical Psychology and Psychological Therapies, Norwich Medical School, University of East Anglia

[2]Medical Research Council Cognition and Brain Sciences Unit, University of Cambridge

[3]Department of Psychology, University of Bath, Bath

[4]Division of Psychology and Language Sciences, University College London

[5]Anna Freud Centre for Children and Families, London

[6]Cambridgeshire Community Services NHS Trust

[7]Department of Psychology, Institute of Psychiatry, Psychology and Neuroscience, King's College London

[8]South London & Maudsley NHS Foundation Trust

Corresponding author email: r.meiser-stedman@uea.ac.uk

Abstract

The dissociative subtype of post-traumatic stress disorder (PTSD-DS) was introduced in the fifth edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-5), and is characterised by symptoms of either depersonalisation or derealisation, in addition to a diagnosis of post-traumatic stress disorder (PTSD). This systematic review and meta-analysis sought to estimate the prevalence of current PTSD-DS, and the extent to which method of assessment, demographic and trauma variables moderate this estimate, across different methods of prevalence estimation. Studies included were identified by searching MEDLINE (EBSCO), PsycInfo, CINAHL, Academic Search Complete, and PTSDpubs, yielding 49 studies that met the inclusion criteria (N = 8214 participants). A random effects meta-analysis estimated the prevalence of PTSD-DS as 38.1% (95% CI 31.5–45.0%) across all samples, 45.5% (95% CI 37.7–53.4%) across all diagnosis-based and clinical cut-off samples, 22.8% (95% CI 14.8–32.0%) across all latent class analysis (LCA) and latent profile analysis (LPA) samples, and 48.1% (95% CI 35.0–61.3%) across samples which strictly used the DSM-5 PTSD criteria; all as a proportion of those already with a diagnosis of PTSD. All results were characterised by high levels of heterogeneity, limiting generalisability. Moderator analyses mostly failed to identify sources of heterogeneity. PTSD-DS was more prevalent in children compared to adults, and in diagnosis-based and clinical cut-off samples compared to LCA and LPA samples. Risk of bias was not significantly related to prevalence estimates. The implications of these results are discussed further.

Keywords: Meta-Analysis; Prevalence; Stress Disorders, Post-Traumatic; Systematic Review

Introduction

In the fifth edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-5; American Psychiatric Association [APA], 2013), post-traumatic stress disorder (PTSD) is classified as a Trauma- and Stressor-Related Disorder. A diagnosis is based on a required number of symptoms across domains of intrusion, avoidance, negative alternations in cognitions and mood, and alterations in arousal and reactivity. Also stipulated in DSM-5 are the criteria required for specifying the dissociative subtype of PTSD (PTSD-DS) where, in addition to first meeting the criteria for PTSD diagnosis, individuals must endorse symptoms of depersonalisation and or derealisation. Depersonalisation involves "persistent or recurrent experiences of feeling detached from, and as if one were an outside observer of, one's mental processes or body", whereas derealisation takes the form of "persistent or recurrent experiences of unreality of surroundings" (DSM-5, 2013, pp. 272).

It has been extensively documented that persistent dissociation is linked to post traumatic symptomology (Carlson, Dalenberg, & McDade-Montez, 2012). The subtype model suggests that PTSD and PTSD-DS are distinct from one another (Dalenberg & Carlson, 2012), where PTSD-DS presents with its own epidemiological features (Schiavone, Frewen, McKinnon, & Lanius, 2018). A recent systematic review concluded that there may be an association between PTSD-DS and psychopathological comorbidity and childhood abuse and neglect (Steuwe, Lanius, & Frewen, 2012), adult sexual abuse (Wolf, Miller et al., 2012), and with depression, suicidal thinking, and drug overdoses (Mergler et al., 2017), despite there being a large degree of heterogeneity in the literature concerning risk factors for PTSD-DS (Hansen, Ross, & Armour, 2017). This indicates that PTSD-DS may reflect a more severe form of PTSD (Zoet, Wagenmans, van Minnen, & de Jongh, 2018), although this is not directly assessed in this study.

One criticism of the PTSD-DS diagnosis is that the symptoms of dissociation chosen as necessary criteria to achieve a diagnosis in DSM-5 are too narrow, where it is believed that the current criteria should also include other symptoms of dissociation (Ross, 2021), following evidence that: dissociative amnesia (Wolf et al., 2017), and flashbacks (Dahal, Kumar, & Thapa, 2018; Hyland et al., 2017) are common in individuals with PTSD. Additionally, memory disturbance, disengagement, time loss, and trance (Frewen, Brown, Steuwe, & Lanius, 2015), gaps in awareness, re-experiencing, and sensory misperception (Műllerová, Hansen, Contractor, Elhai, & Armour, 2016; Ross, Baník, Dědová, Mikulášková, & Armour, 2018) are associated with PTSD-DS. However, to some extent, these symptoms are already captured by the existing PTSD criteria.

Several methodologies have been used to determine the prevalence of PTSD-DS, with early studies using taxometric (Waelde, Silvern, & Fairbank, 2005; Waller & Ross, 1997), and signal detection (Ginzburg et al., 2006) analyses. The prevalence of PTSD-DS has also been described in studies where participants were selected primarily due to a specific comorbid difficulty, such as substance abuse disorder and psychosis, using the DSM-5 diagnostic criteria (Gidzgier et al., 2019; Mergler et al., 2017; van Minnen et al., 2016), and in studies that assessed subsyndromal PTSD (Bennett, Modrowski, Kerig, & Chaplo, 2015; Kerig et al., 2016; Modrowski & Kerig, 2017). Prevalence rates of PTSD-DS have been reported in different ways; some with respect to the total number of participants regardless of whether the sample tested had PTSD, some were only trauma-exposed or from a community sample, whereas other prevalence rates were with respect to those with PTSD. This makes it challenging to make comparisons between studies. Hansen et al.'s (2017) systematic review of latent class and profile analyses (LCA and LPA respectively) indicated the mean prevalence of PTSD-DS as 20.4%. LCA determines hidden groups based on the means of categorical variables, whereas LPA does the same for continuous variables (Oberski, 2016).

Both LCA and LPA are exploratory techniques that determine underlying hidden profiles or groups of individuals from observed data who display similar patterns of symptoms (Muthén, 2004; Oberski, 2016). The 'best' number of groups is determined by the most appropriate model fit, and whilst there are many methods for determining the number of classes or profiles, the two most common methods are the Akaike information criterion and Bayesian information criterion (where lower values indicate a better fit). However, the selection of the optimal number of classes or profiles, and the qualitative naming of each group, remains subjective on the part of the researcher which has implications for valid prevalence estimation (Hansen et al., 2017). In addition, Hansen et al. (2017) averaged the prevalence values despite dissociation being defined differently in various studies; some used the DSM-5 criteria stipulating symptoms of either depersonalisation or derealisation, and other studies assessed a wider spectrum of dissociative experiences. Finally, due to methodological constraints, there was no way of breaking down the heterogeneous nature of the population (Hansen et al., 2017).

There is a need to comprehensively systematically review studies to attempt to establish some consensus around how prevalent PTSD-DS is in children and adults. This study aimed to conduct a broad meta-analysis of data from studies investigating current PTSD-DS to reach a reliable estimate of prevalence from studies utilising various methods of prevalence estimation, furthering the systematic review of Hansen et al. (2017). The aim was to provide greater insight into the heterogeneity that is common within participants with PTSD. This might lead to the development of risk factors for this particular subtype and help the structuring of efficacious interventions. This review will be, to the authors' knowledge, the first of its kind to meta-analyse the prevalence of PTSD-DS in participants with PTSD, assessing moderators that affect PTSD-DS prevalence, and using studies utilising different methods of prevalence estimation. There is disagreement as to what symptoms of dissociation

should be required as necessary criteria to achieve a diagnosis of PTSD-DS, and this review may shed further light on this debate, by comparing the prevalence rates of PTSD-DS when defined by depersonalisation and or derealisation, and when dissociation is defined more broadly.

Method

The protocol for this review was pre-registered on PROSPERO (reference: CRD42021210902) prior to any formal review of searches.

Search Strategy

Relevant studies were identified through a systematic search of the following databases: MEDLINE (EBSCO), PsycInfo, CINAHL, Academic Search Complete, and PTSDpubs. Studies included were those published from 1st January 1980, when the Diagnostic and Statistical Manual of Mental Disorders first defined PTSD according to DSM-III (APA, 1980), and before 14th February 2021 when the searches were conducted.

The following search terms were used for each database, processing study titles and abstracts only: (posttrauma* OR post-trauma* OR "post trauma*" OR PTSD OR PTSS) AND (dissociat* OR depersonali* OR dereali*). Medical Subject Headings (MeSH) terms, and other equivalent key words for other databases, were used for each search term: ‘post-traumatic stress disorder’, ‘post-traumatic stress’, ‘posttraumatic stress disorder’, ‘posttraumatic stress’ ‘post-traumatic stress disorder in children’, ‘stress disorders, post-traumatic’, ‘complex PTSD’, ‘PTSD’, ‘PTSD (DSM-III)’, ‘PTSD (DSM-III-R)’, ‘PTSD (DSM-IV)’, ‘PTSD (DSM-5)’, ‘PTSD (ICD-9)’, ‘PTSD (ICD-10)’, ‘PTSD (ICD-11)’, ‘dissociation’, and ‘depersonalization’.

The reference sections of relevant systematic reviews and meta-analyses were also searched to ensure studies were not missed.

Inclusion and Exclusion Criteria

Studies were included in this review if data were presented on the prevalence of PTSD-DS following a traumatic event. In a bid to take a broad and comprehensive approach, the prevalence of PTSD-DS was defined as the number of participants: who scored above a clinical cut-off on a validated measure or who met DSM diagnostic criteria following a clinical interview or self-report measure, or who were categorised into a distinct class or profile following LCA or LPA. Studies of participants of all ages, any sex, and from either community or clinical samples were included. Studies were excluded: if they were not written in English; if participants were selected primarily due to a specific comorbid disorder; if PTSD was assessed acutely within a month of the index trauma; if exclusively lifetime PTSD or PTSD-DS prevalence was reported; if subsyndromal PTSD was assessed only; if dissociation was triggered via experimental manipulation; or if studies used analyses other than LCA, LPA, diagnostic, or clinical cut-off to determine the prevalence of PTSD-DS. Qualitative methodology, single case studies, reviews and meta-analyses were also excluded.

Screening, Data Extraction, Coding and Synthesis

All studies were screened, and the data extracted by the first author (WW) using a database which indexed the information provided in Table 1. The extracted data for all studies were reviewed by an independent researcher (AO), so as to reduce the likelihood of error (Buscemi, Hartling, Vandermeer, Tjosvold, & Klassen, 2006). Any queries were discussed, and agreement reached between the researchers. Wherever there was continued disagreement, a final decision was made by the senior researcher (RM-S). Where there was missing information, authors were contacted directly.

During data extraction, several rules were followed to ensure consistency between studies. Articles such as Eidhof et al. (2019), Guetta et al. (2019), and Zoet et al. (2018) used multiple measures for the assessment of PTSD, however in these cases the Clinician

Administered PTSD scale (CAPS) was prioritised as it is regarded as the gold standard for assessing PTSD (Weathers et al., 2004). Other studies assessed multiple populations (Hansen, Müllerová, Elklit, and Armour, 2016; Kenny, Helpingstine, Long, & Harrington, 2020; Wolf, Lunney et al., 2012), or used multiple analyses (Choi et al., 2017; 2019; Hansen, Hyland, Armour, & Andersen, 2019), and therefore these were treated separately in this review as individual samples. Care was taken to ensure that no dataset contributed more than one data point in any one meta-analysis (where diagnostic and clinical cut-off samples were prioritised over LCA and LPA samples). Multiple studies investigating the same population were removed, retaining the study with the largest sample size. Many studies (Cloitre, Petkova, Wang, & Lu, 2012; Daniels, Frewen, Theberge, & Lanius, 2016; Swart, Wildschut, Fraijer, Langeland, & Smit, 2020; Tsai, Armour, Southwick, & Pietrzak, 2015) reported means and standard deviations for participant age and sex in aggregated format, rather than for the sample as a whole. For these studies, the means and standard deviations were combined (Altman et al., 2013; Higgins et al., 2012). When absolute frequencies were not reported, these were calculated from the reported percentage prevalence. For the LCA and LPA samples, only those classed as having ‘moderate’ to ‘severe’ symptomology were deemed to meet ‘caseness’ for PTSD and PTSD-DS. The prevalence of PTSD-DS was consistently calculated as a proportion of all participants with PTSD.

Quality Assessment and Risk of Bias

Two authors (WW & AO) assessed the risk-of-bias using a researcher developed tool based on the Assessment Tool for Observational Cohort and Cross-Sectional Studies (National Heart Lung and Blood Institute, 2014), and modified questions from other relevant prevalence and risk factor studies (Hoy et al., 2012; Munn, Moola, Riitano, & Lisy, 2014). The quality assessment checklist (see Supplementary Material) consisted of five items assessing how well the population and index trauma were specified, the rate of participation,

and whether objective and standard criteria were used for the assessment of PTSD and PTSD-DS. Each item used a three-point scale (0-2), and the following categorical system was used to rate the total risk-of-bias score: 0-4 high risk/low quality, 5-6 moderate risk/quality, 7-10 low risk/high quality, following the methodology used by Memarzia, Walker, and Meiser-Stedman (2021). An inter-rater reliability assessment was conducted for all ratings between the two raters (WW & AO) which indicated a good correlation on all items (intraclass correlation = 0.87, 95% CI 0.77–0.93).

Meta-Analytic Method

The meta-analysis was conducted using R (version 4.1.1) which uses the metafor package (version 3.0-2; Viechtbauer, 2010). The extracted prevalence of PTSD-DS, as a proportion of all PTSD cases, was pooled to provide a weighted estimate of the prevalence of PTSD-DS overall (with 95% confidence intervals [CI]).

A random effects model was used given the high degree of variability expected in effect size between samples as it provides a broader and more conservative 95% confidence interval around the estimate of the prevalence.

The estimates of the prevalence underwent an arcsin transformation to ensure that the confidence intervals did not fall below zero for samples where the prevalence estimate was low (Barendregt, Doi, Lee, Norman, & Vos, 2013); results were then back transformed for ease of interpretation.

Cochran's *Q* test (Cochran, 1954) was used to ascertain if heterogeneity within samples was significant. The I^2 statistic (Higgins & Thompson, 2002) was used to determine the percentage of total variation in sample estimates that is due to between-study heterogeneity.

Moderator analyses of prevalence estimates were conducted to ascertain if sample characteristics impacted the prevalence estimate. These characteristics included: method of

PTSD-DS assessment, which DSM criteria was used, participant age group, occupation, and the type of trauma suffered. These were included as there were multiple samples that allowed for these comparisons to be made. A sensitivity analysis was used to assess the impact of risk-of-bias on the estimated pooled prevalence. This was achieved by repeating the meta-analysis, excluding those samples that constituted a high risk-of-bias. Any differences in the moderator and sensitivity analyses were tested for clinical significance by meta-analytic regression.

A funnel plot was used to assess for publication bias (Higgins et al., 2012), however this is less likely to occur in prevalence studies given there is no assessment of clinical significance, and therefore it is less likely that there is a bias in levels of acceptance to journals (Brewin, Andrews, & Valentine, 2000). The 'trim-and-fill' method was used (Duval & Tweedie, 2000), where any missing null or weaker studies are estimated to improve the symmetry of the sample distribution.

Results

The Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) diagram shows that 337 studies met the eligibility criteria following the initial screen of titles and abstracts (Figure 1). Full text reviews were conducted again, leading to 49 studies being included in the meta-analysis. Four studies were split into two samples due to different characteristics, index traumas or analyses, leaving 53 samples included in this review (Table 1). Around half the samples were treatment-seeking (k = 23), and PTSD-focussed (a diagnosis of PTSD was an inclusion criterion; k = 22). Nine samples included only female participants, three samples included only males, and the rest were mixed or the sex was not reported. The majority of included samples were adult (k = 41); only five exclusively comprised children. Samples mostly originated from high-income countries (k = 49).

[Figure 1]

[Table 1]

Risk-of-Bias Assessment

Twelve samples were deemed to be at high risk-of-bias, 16 were moderate risk, whereas 25 were low risk. The proportion of samples rated as low, moderate and high risk across the five quality assessment items can be seen in the Supplementary Material.

Prevalence

The pooled prevalence of PTSD-DS estimates and heterogeneity statistics for all samples can be seen in Table 2. The overall pooled prevalence was 38.1%. For diagnosis-based and clinical cut-off samples the pooled prevalence was 45.5%, while for latent class and profile samples the estimate was 22.8%. Meta-regression analyses indicated that the prevalence of PTSD-DS in the diagnosis-based or clinical cut-off samples was statistically significantly greater that the LCA or LPA samples (see Figure 2 for forest plot). The range of prevalence overall was 0-100%, and the degrees of between sample heterogeneity were extremely high.

[Table 2]

[Figure 2]

Moderator Analyses

All Samples

Moderator analyses were conducted for all samples to assess whether the pooled prevalence estimate of PTSD-DS was associated with demographic, trauma or assessment factors (Table 2). Meta-regression analyses confirmed that the prevalence of PTSD-DS in the child samples was statistically significantly greater than the adult samples, although there were only four child samples for comparison. All other comparisons were non-significant; however, several comparisons were likely underpowered.

Diagnostic and Clinical Cut-off Samples

Further subgroup moderator analyses were conducted separately for the diagnostic and clinical cut-off samples (Table 3), regardless of the dissociation criteria used, given the significant difference in pooled prevalence estimates of PTSD-DS between these samples and those using LCA or LPA. Meta-regression analyses confirmed again that the prevalence of PTSD-DS in the child samples was statistically significantly greater than the adult samples, although there were only four child samples for comparison. All other comparisons were non-significant, however several comparisons were likely underpowered.

[Table 3]

Further moderator analyses were conducted for only those samples utilising DSM-5 criteria for dissociation (depersonalisation and or derealisation; see Supplementary Material). When only samples using DSM-5 diagnostic and clinical cut-off criteria for the assessment of PTSD and PTSD-DS were pooled, the estimated prevalence of PTSD-DS was 48.2%. This provides the most valid estimate of PTSD-DS prevalence according to the DSM-5 criteria. Meta-regression analyses confirmed again that the prevalence of PTSD-DS in the child samples was statistically significantly greater than the adult samples, although there were only four child samples for comparison. All other comparisons were non-significant, however several comparisons were likely underpowered.

Latent Class and Profile Samples

Moderator analyses were conducted separately for the LCA and LPA samples (see Supplementary Material), again given the significant difference in pooled prevalence of PTSD-DS estimates between these samples and those using diagnostic and clinical cut-off methods. Meta-regression analyses confirmed that there were no statistically significant differences, however several comparisons were likely underpowered.

Sensitivity Analyses

When the 28 samples of low and moderate quality were removed, the estimated prevalence of PTSD-DS was not dissimilar to that for all samples (35.7%, 95% CI 24.8–47.3%) with a similar degree of between sample heterogeneity (k = 25, $Q(24)$ = 717.8, p < 0.0001, I^2 = 98.5%). Meta-regression analyses indicated there was not a significant difference between high and low-moderate quality groups (β = 0.0040 [95% CI -0.1384, 0.1463], p = 0.96). Therefore, it can be concluded that there was no support for the quality of the samples affecting the prevalence of PTSD-DS estimates.

Given the differences in prevalence in PTSD-DS between child and adult samples, the child samples were removed to assess whether similar results were achieved as in Table 2. Meta-regression analyses confirmed that the only statistically significant difference existed between the estimated prevalence of PTSD-DS for the diagnosis-based or clinical cut-off samples and LCA or LPA samples (β = -0.2159 [95% CI -0.3531, -0.0787], p = 0.002). All other comparisons were non-significant (ps = 0.19–0.87), however several comparisons were likely underpowered.

Publication Bias

Visual inspection of the funnel plot (see Supplementary Material) suggests the distribution of samples is asymmetrical, which was confirmed by Egger's test (p = 0.03). However, the study of Kenny et al. (2020; sample 29) was very small and should be considered an outlier. When this sample was removed, the Egger's test confirmed the symmetry of the distribution (p = 0.30). No null or weaker studies were estimated as missing, indicating little to no publication bias.

Discussion

A comprehensive systematic review and meta-analysis of prevalence data from studies investigating current PTSD-DS utilising various methods of prevalence estimation

was completed. The aim was to generate a reliable estimate for the prevalence of PTSD-DS and to provide greater insight into the heterogeneity that is common within participants with PTSD-DS. The estimated pooled prevalence of PTSD-DS was: 38.1% for all samples, 45.5% for all diagnostic and clinical cut-off samples, and 22.8% for all LCA and LPA samples. The estimated prevalence of PTSD-DS from the LCA and LPA samples was similar to the mean prevalence found in the Hansen et al. (2017) systematic review (20.4%); this is unsurprising given nine of the eleven studies in the Hansen et al. (2017) review were also included in the present study. When only samples strictly using DSM-5 diagnostic and clinical cut-off criteria for the assessment of PTSD and PTSD-DS were pooled, the estimated prevalence of PTSD-DS was 48.1%. The prevalence of PTSD-DS may therefore be significantly greater than previously suggested.

Impact of Diagnostic and Clinical Cut-off Assessment Versus LCA and LPA on Estimated Prevalence of PTSD-DS

The estimated prevalence of PTSD-DS for the diagnostic and clinical cut-off samples was significantly higher than that of the LCA and LPA samples. Use of clinical cut-off measures may overestimate the prevalence of PTSD in adults (Richardson, Frueh, & Acierno, 2010). Moreover, it may be easier to identify individuals with PTSD who show symptoms of depersonalisation or derealisation in a clinical interview or that surpass a clinical cut-off on a dissociation measure, rather than via LCA and LPA methods. On the other hand, latent class and profile analyses may rely on participants reporting multiple significant dissociative symptoms rather than just one symptom to a significant level. Achterhof, Huntjens, Meewisse, and Kiers (2019) questioned the use of LCA and LPA to ascertain the prevalence of Complex PTSD and highlighted that despite the analyses determining distinct profiles, the symptom profile for groups of participants were very close to one another and even

overlapped on occasion. Therefore, it may be questioned whether LCA and LPA reliably and validly estimates subtype prevalence.

Impact of Moderators on Estimated Prevalence of PTSD-DS

There was no significant difference between the estimated prevalence of PTSD-DS when dissociation was assessed by the DSM-5 criteria (presence of either depersonalisation or derealisation) or when defined by a broader spectrum of dissociative symptoms. The aim of the inclusion of the PTSD-DS in DSM-5 was to define a small subgroup of individuals with consistent clinical and epidemiological features (Miller, Wolf, & Keane, 2014; Schiavone et al., 2018), however results from the present study suggest a subtype where the prevalence varies very widely across samples (0-100%) and where the heterogeneity cannot be broken down following moderator analyses. Research literature suggests that the symptomology of PTSD is itself heterogeneous (Elhai, Frueh, Davis, Jacobs, & Hamner, 2003; Galatzer-Levy & Bryant, 2013; Naifeh, Richardson, Del Ben, & Elhai, 2010), where dissociation is one such symptom that can vary.

The estimated prevalence of PTSD-DS was significantly higher for samples of children compared to adults, although there are limited number of samples investigating exclusively children, and the results were dominated by that of Choi et al. (2019; sample 10). There was no one trauma type that best categorised the child samples. Research has shown that dissociation is a common experience for children, that later becomes less prevalent with child development and the transition into adulthood (Brunner, Parzar, Schuld, & Resch, 2000; Coons, 1996; Choi et al., 2017; Shimizu & Sakamoto, 1986). Choi et al. (2019) reported that 53.7% of children with PTSD had the dissociative subtype; a prevalence much higher than in many other adult samples, and the authors cited the prominence of dissociation as a form of coping in response to maltreatment in childhood (Liotti, 2004; Putnam, 1997). Children may be more susceptible to PTSD-DS because they do not have the same capacity

to avoid cues relating to the traumatic event, especially when the trauma was based within the home environment, or with a primary caregiver (Choi et al., 2019). In children, dissociation may offer an alternative method of escape to reduce distress. It might also be considered whether depersonalisation and derealisation are the most appropriate symptoms by which to assess for PTSD-DS in children. The premise of the subtype model is that these dissociative symptoms are rare (Lanius et al., 2014), however it may be that dissociative experiences are more common in youth (Carlson, Yates, & Sroufe, 2009) and may not even be considered as pathological. Further research is required within this area to determine whether children are more at risk from dissociation in the context of PTSD compared to adults, as the lack of power within the samples of children frustrated the moderator analyses.

Other than age group, all other moderator analyses yielded non-significant results indicating no support for any differences between estimated prevalence of PTSD-DS. This is surprising given the extant research on mediators and risk factors in relation to PTSD-DS (Hansen et al., 2017; Schiavone et al., 2018 for review), but these non-significant results are likely to reflect the heterogeneity between these samples and the lack of power in some moderator analyses.

It is important to stress that the pooled prevalence estimates were characterised by a high degree of heterogeneity throughout, and inspection of the forest plot (Figure 2) shows how varied the prevalence of PTSD-DS is across different samples. This is not unexpected given the multiple ways of assessing and conceptualising PTSD-DS, however subsequent sensitivity and moderation analyses failed to reduce the level of heterogeneity. This therefore limits the generalisability of the findings. The consistently high level of heterogeneity may reflect the difficulty in conceptualising and defining a construct such as dissociation in the context of PTSD. Even when only samples adhering to the strict DSM-5 criteria for PTSD-DS were pooled, a high degree of heterogeneity remained.

Clinical Implications and Suggestions for Future Research

This meta-analysis suggests that PTSD-DS is common following trauma exposure, and therefore should be routinely assessed for and formulated. Moreover, the method for determining PTSD-DS was found to have important implications for the estimated prevalence, where samples using diagnostic and clinical cut-off methods reported a higher prevalence than those using LCA and LPA. Future research should also aim to standardise the methodology used to identify and determine PTSD-DS in order to make more valid comparisons between studies.

Additionally, PTSD-DS was found to be more common in children than adults. Clinicians supporting individuals with PTSD should be aware that dissociation is a prevalent and important feature of the overall presentation of PTSD; this may be especially true for children, though this finding was based on only five samples. When the DSM-5 criteria were published it was believed that PTSD-DS cases formed a minority of those with PTSD, however the finding that nearly half of PTSD cases meet the criteria for PTSD-DS suggests that it may be less of a subtype and that dissociation forms a central component to PTSD symptomology. This should be a consideration for how dissociation is specified in future versions of the DSM. Perhaps the conceptualisation of Complex PTSD as defined by the 11th revision of the International Classification of Diseases (World Health Organisation, 2019), where dissociation is stipulated as one of several symptoms seen to be indicative of a more complex form of PTSD, is a more appropriate fit. There is evidence for instance that individuals with Complex PTSD have elevated levels of dissociation (Hyland, Shevlin, Fyvie, Cloitre, & Karatzias, 2019).

Despite the DSM-5 criteria stipulating depersonalisation and derealisation as symptoms required for PTSD-DS, findings of this review suggested that when a wider view of dissociation (i.e., drawing on a broader range of dissociation symptoms) is included in the

criteria, PTSD-DS prevalence does not change significantly. No conclusions can be drawn as to whether it would be more or less appropriate for a narrower (i.e., solely based on depersonalisation and or derealisation) or a broader definition of dissociation, in the context of this subtype, to be used in future versions of diagnostic criteria. However, it does not seem to matter how dissociation is defined when determining the prevalence of PTSD-DS, which raises questions firstly about the strict nature of the DSM criteria when defining this subtype (Ross, 2021), and secondly about the existence of this subtype full stop. Further research is required to establish whether PTSD-DS could be indicative of a distinct form of PTSD that has its own clinical characteristics, and therefore break down the heterogeneity common to populations with the subtype. This would help inform exactly how dissociation should be integrated into future diagnostic criteria of PTSD. Perhaps as Ross (2021) suggests, future diagnostic criteria could stipulate the requirement for the presence of one or more of: depersonalisation, derealisation, dissociative amnesia, and dissociative flashbacks. Non-dissociative PTSD may then form the subtype based on a minority of cases, and dissociative PTSD may form the majority of diagnosed cases.

Limitations

There are several limitations that should be considered for this review. Firstly, whilst many more studies were reviewed in comparison to the most recent systematic review (Hansen et al., 2017), there was still a considerable degree of heterogeneity between samples, reducing the generalisability of the findings. This raises questions around the validity of the underlying diagnostic subtype. Secondly, most studies were conducted in high income countries, and all studies were exclusively written in English, therefore indicating that the results are likely not globally generalisable. Thirdly, some moderator analyses lacked power and further planned moderator analyses were not possible due to a lack of identified studies. Understanding the influence of, for instance, sex, time between index trauma and PTSD

assessment, single- versus multi-event traumas, and individual versus collective trauma could lead to important and interesting findings. Finally, several studies chose to assess PTSD-DS with regard to the most recent trauma that the participant was exposed to, and it is unclear whether other traumas may have taken place, and what impact these may have on the prevalence of PTSD-DS.

Conclusion

This study is the first to meta-analyse data on the prevalence of PTSD-DS. The estimated prevalence of PTSD-DS, with respect to participants diagnosed with PTSD, was 38.1% (95% CI 31.5 – 45.0%) for all samples, 45.5% (95% CI 37.7 – 53.4%) for all diagnosis-based and clinical cut-off samples, 22.8% (95% CI 14.8 – 32.0%) for all LCA and LPA samples, and 48.1% (95% CI 35.0 – 61.3%) for diagnosis-based and clinical cut-off samples which assessed PTSD and PTSD-DS strictly according to the DSM-5 criteria. The prevalence of PTSD-DS was significantly higher for children compared to adults. Factors such as the DSM criteria used for the assessment of both PTSD and dissociation, whether the dissociation assessment was self-report or interview, and participant or trauma characteristics, did not significantly affect the estimated prevalence of PTSD-DS. However, all results were characterised by very high levels of heterogeneity. Further research is required to investigate this construct, and to determine how it should be best conceptualised in future editions of diagnostic criteria.

Acknowledgements: None.

Funding Statement: This research received no specific grant from any funding agency, commercial or not-for-profit sectors. The first author is funded by Health Education England to complete the Doctorate in Clinical Psychology at the University of East Anglia. Although this funding has not implicated this study directly, it has afforded the opportunity to complete this research.

Conflict of Interest: None

References

Abu-Rus, A., Thompson, K. J., Naish, B. L., Brown, C., & Dalenberg, C. (2020). Development of a validity scale for the dissociative experience scale-revised: Atypicality, structure, and inconsistency. *Psychological Injury and Law, 13*, 167-177. Retrived from https://link-springer-com.uea.idm.oclc.org/article/10.1007/s12207-019-09371-9

Acar, Ö. F., Öğülmüş, S., & Boysan, M. (2019). Associations between circadian preferences, sleep quality, dissociation, post-traumatic cognitions, and post-traumatic stress disorder (PTSD) among incarcerated offenders. *Sleep and Hypnosis*, *21*(3), 201-219. https://dx.doi.org/10.5350/Sleep.Hypn.2019.21.0188

Achterhof, R., Huntjens, R. J., Meewisse, M. L., & Kiers, H. A. (2019). Assessing the application of latent class and latent profile analysis for evaluating the construct validity of complex posttraumatic stress disorder: Cautions and limitations. *European Journal of Psychotraumatology*, *10*(1), 1698223. https://doi.org/10.1080/20008198.2019.1698223

Altman, D., Machin, D., Bryant, T., & Gardner, M. (2013). *Statistics with confidence: Confidence intervals and statistical guidelines.* John Wiley & Sons.

American Psychiatric Association. (1980). *Diagnostic and statistical manual of mental disorders* (3rd ed.). Washington, DC: Author. https://doi.org/10.1176/ajp.137.12.1630

American Psychiatric Association (1994). *Diagnostic and statistical manual of mental disorders* (4th ed.). Washington, DC: Author. https://doi.org/10.1007/springerreference_179660

American Psychiatric Association (2013). *Diagnostic and statistical manual of mental disorders* (5th ed.). Washington, DC: Author. https://doi.org/10.1176/appi.books.9780890425596

Armour, C., Elklit, A., Lauterbach, D., & Elhai, J. D. (2014). The DSM-5 dissociative-PTSD subtype: Can levels of depression, anxiety, hostility, and sleeping difficulties differentiate between dissociative-PTSD and PTSD in rape and sexual assault victims? *Journal of Anxiety Disorders*, *28*(4), 418-426. https://doi.org/10.1016/j.janxdis.2013.12.008

Armour, C., Karstoft, K. I., & Richardson, J. D. (2014). The co-occurrence of PTSD and dissociation: Differentiating severe PTSD from dissociative-PTSD. *Social Psychiatry and Psychiatric Epidemiology*, *49*(8), 1297-1306. https://doi.org/10.1007/s00127-014-0819-y

Barendregt, J. J., Doi, S. A., Lee, Y. Y., Norman, R. E., & Vos, T. (2013). Meta-analysis of prevalence. *Journal of Epidemiology and Community Health*, *67*(11), 974–978. https://doi.org/10.1136/jech-2013-203104

Bennett, D. C., Modrowski, C. A., Kerig, P. K., & Chaplo, S. D. (2015). Investigating the dissociative subtype of posttraumatic stress disorder in a sample of traumatized detained youth. *Psychological Trauma: Theory, Research, Practice, and Policy*, *7*(5), 465-472. https://doi.org/10.1037/tra0000057

Blevins, C. A., Weathers, F. W., & Witte, T. K. (2014). Dissociation and posttraumatic stress disorder: A latent profile analysis. *Journal of Traumatic Stress*, *27*(4), 388-396. https://doi.org/10.1002/jts.21933

Boysan, M., Ozdemir, P. G., Yilmaz, E., Selvi, Y., Özdemir, O., & Kefeli, M. C. (2017). Psychometric properties of the Turkish version of the Clinician-Administered PTSD scale for Diagnostic and Statistical Manual of Mental Disorders, fifth edition (Turkish CAPS-5). *Psychiatry and Clinical Psychopharmacology*, *27*(2), 173-184. https://doi.org/10.1080/24750573.2017.1326746

Brewin, C. R., Andrews, B., & Valentine, J. D. (2000). Meta-analysis of risk factors for posttraumatic stress disorder in trauma-exposed adults. *Journal of Consulting and Clinical Psychology, 68,* 748–766. https://doi.org/10.1037/0022-006x.68.5.748

Briere, J., Scott, C., & Weathers, F. (2005). Peritraumatic and persistent dissociation in the presumed etiology of PTSD. *American Journal of Psychiatry*, *162*(12), 2295-2301. https://doi.org/10.1176/appi.ajp.162.12.2295

Brunner, R., Parzer, P., Schuld, V., & Resch F. (2000). Dissociative symptomatology and traumatogenic factors in adolescent psychiatric patients. *The Journal of Nervous and Mental Disease*, *188*(2), 71–77. https://doi.org/10.1097/00005053-200002000-00002

Burton, M. S., Feeny, N. C., Connell, A. M., & Zoellner, L. A. (2018). Exploring evidence of a dissociative subtype in PTSD: Baseline symptom structure, etiology, and treatment efficacy for those who dissociate. *Journal of Consulting and Clinical Psychology*, *86*(5), 439-451. https://doi.org/10.1037/ccp0000297

Buscemi, N., Hartling, L., Vandermeer, B., Tjosvold, L., & Klassen, T. P. (2006). Single data extraction generated more errors than double data extraction in systematic reviews. *Journal of Clinical Epidemiology*, *59*(7), 697-703. https://doi.org/10.1016/j.jclinepi.2005.11.010

Carlson, E., Dalenberg, C., & McDade-Montez, E. (2012). Dissociation in posttraumatic stress disorder part I: Definitions and review of research. *Psychological Trauma: Theory, Research, Practice, and Policy*, *4*(5), 479–489. https://doi.org/10.1037/a0030230

Carlson, E., Yates, T. M., & Sroufe, L. A. (2009). Dissociation and development of the self. In P. F. Dell & J. A. O'Neil (Eds.), *Dissociation and the dissociative disorders: DSM-V and beyond* (pp. 39–52). New York: Routledge.

Caroppo, E., Lanzotti, P., & Janiri, L. (2021). Psychopathology in refugees subjected to the Dublin Regulation: An Italian study. *CNS Spectrums*, *26*(1), 77-83. https://doi.org/10.1017/S1092852920001248

Choi, K. R., Ford, J. D., Briggs, E. C., Munro-Kramer, M. L., Graham-Bermann, S. A., & Seng, J. S. (2019). Relationships between maltreatment, posttraumatic symptomatology, and the dissociative subtype of PTSD among adolescents. *Journal of Trauma and Dissociation*, *20*(2), 212-227. https://doi.org/10.1080/15299732.2019.1572043

Choi, K. R., Seng, J. S., Briggs, E. C., Munro-Kramer, M. L., Graham-Bermann, S. A., Lee, R. C., & Ford, J. D. (2017). The dissociative subtype of posttraumatic stress disorder (PTSD) among adolescents: Co-occurring PTSD, depersonalization/derealization, and other dissociation symptoms. *Journal of the American Academy of Child and Adolescent Psychiatry*, *56*(12), 1062-1072. https://doi.org/10.1016/j.jaac.2017.09.425

Cloitre, M., Petkova, E., Wang, J., & Lu, F. (2012). An examination of the influence of a sequential treatment on the course and impact of dissociation among women with PTSD related to childhood abuse. *Depression and Anxiety*, *29*(8), 709-717. https://doi.org/10.1002/da.21920

Cochran, W. (1954). The combination of estimates from different experiments. *Biometrics*, *10*(1), 101-129. https://doi.org/10.2307/3001666

Coons, P. M. (1996). Depersonalization and derealization. In L. K. Michelson & W. J. Ray (Eds.), *Handbook of dissociation* (pp. 291-305). Springer, Boston, MA. https://doi.org/10.1007/978-1-4899-0310-5_14

Criswell, S. R., Sherman, R., & Krippner, S. (2018). Cognitive behavioral therapy with heart rate variability biofeedback for adults with persistent noncombat-related

posttraumatic stress disorder. *The Permanente Journal*, *22*, 17–207. https://doi.org/10.7812/TPP/17-207

Cuijpers, P. (2016). *Meta-analyses in mental health research: A practical guide*. Amsterdam, Netherlands: VU University.

Dahal, H. R., Kumar, S., & Thapa, D. K. (2018). Prevalence and risk factors of post-traumatic stress disorders among survivors of the 2015 Nepal earthquake, in Dhading, Nepal. *Sleep and Hypnosis, 20*(2), 128–139. https://doi.org/10.5350/sleep.hypn.2017.19.0145

Dalenberg, C., & Carlson, E. B. (2012). Dissociation in posttraumatic stress disorder part II: How theoretical models fit the empirical evidence and recommendations for modifying the diagnostic criteria for PTSD. *Psychological Trauma: Theory, Research, Practice, and Policy*, *4*(6), 551–559. https://doi.org/10.1037/a0027900

Daniels, J. K., Frewen, P., Theberge, J., & Lanius, R. A. (2016). Structural brain aberrations associated with the dissociative subtype of post-traumatic stress disorder. *Acta Psychiatrica Scandinavica*, *133*(3), 232-240. https://doi.org/10.1111/acps.12464

Dorahy, M. J., Corry, M., Black, R., Matheson, L., Coles, H., Curran, D., … Dyer, K. F. (2017). Shame, dissociation, and complex PTSD symptoms in traumatized psychiatric and control groups: Direct and indirect associations with relationship distress. *Journal of Clinical Psychology*, *73*(4), 439-448. https://doi.org/10.1002/jclp.22339

Durham, T. A., Byllesby, B. M., Elhai, J. D., & Wang, L. (2020). Latent profile analysis of PTSD and dissociation, and relations with anger. *Current Psychology*, 1-8. https://doi.org/10.1007/s12144-020-00693-5

Duval, S., & Tweedie, R. (2000). Trim and fill: A simple funnel-plot-based method of testing and adjusting for publication bias in meta-analysis. *Biometrics, 56*(2), 455-463. https://doi.org/10.1111/j.0006-341x.2000.00455.x

Eidhof, M. B., ter Heide, F. J. J., van Der Aa, N., Schreckenbach, M., Schmidt, U., Brand, B. L., … Vermetten, E. (2019). The dissociative subtype of PTSD interview (DSP-I): Development and psychometric properties. *Journal of Trauma and Dissociation*, *20*(5), 564-581. https://doi.org/10.1080/15299732.2019.1597806

Elhai, J. D., Frueh, B. C., Davis, J. L., Jacobs, G. A., & Hamner, M. B. (2003). Clinical presentations in combat veterans diagnosed with posttraumatic stress disorder. *Journal of Clinical Psychology*, *59,* 385-397. https://doi.org/10.1002/jclp.10135

Frewen, P. A., Brown, M. F., Steuwe, C., & Lanius, R. A. (2015). Latent profile analysis and principal axis factoring of the DSM-5 dissociative subtype. *European Journal of Psychotraumatology*, *6*(1), 26406. https://doi.org/10.3402/ejpt.v6.26406

Frewen, P., Zhu, J., & Lanius, R. (2019). Lifetime traumatic stressors and adverse childhood experiences uniquely predict concurrent PTSD, complex PTSD, and dissociative subtype of PTSD symptoms whereas recent adult non-traumatic stressors do not: Results from an online survey study. *European Journal of Psychotraumatology*, *10*(1), 1606625. https://doi.org/10.1080/20008198.2019.1606625

Galatzer-Levy, I. R., & Bryant, R. A. (2013). 636,120 ways to have posttraumatic stress disorder. *Perspectives on Psychological Science, 8*(6), 651–662. https://doi.org/10.1177/1745691613504115

Gidzgier, P., Grundmann, J., Lotzin, A., Hiller, P., Schneider, B., Driessen, M., … Schäfer, I. (2019). The dissociative subtype of PTSD in women with substance use disorders: Exploring symptom and exposure profiles. *Journal of Substance Abuse Treatment, 99,* 73-79. https://doi.org/10.1016/j.jsat.2019.01.004

Ginzburg, K., Koopman, C., Butler, L. D., Palesh, O., Kraemer, H. C., Classen, C. C., & Spiegel, D. (2006). Evidence for a dissociative subtype of post-traumatic stress

disorder among help-seeking childhood sexual abuse survivors. *Journal of Trauma and Dissociation, 7*(2), 7–27. https://doi.org/10.1300/j229v07n02_02

Guetta, R. E., Wilcox, E. S., Stoop, T. B., Maniates, H., Ryabchenko, K. A., Miller, M. W., & Wolf, E. J. (2019). Psychometric properties of the dissociative subtype of PTSD scale: Replication and extension in a clinical sample of trauma-exposed veterans. *Behavior Therapy, 50*(5), 952-966. https://doi.org/10.1016/j.beth.2019.02.003

Hansen, M., Hyland, P., & Armour, C. (2016). Does highly symptomatic class membership in the acute phase predict highly symptomatic classification in victims 6 months after traumatic exposure? *Journal of Anxiety Disorders, 40*, 44-51. https://doi.org/10.1016/j.janxdis.2016.04.008

Hansen, M., Hyland, P., Armour, C., & Andersen, T. E. (2019). Assessing the existence of dissociative PTSD in sub-acute patients of whiplash. *Journal of Trauma and Dissociation, 20*(1), 16-31. https://doi.org/10.1080/15299732.2018.1451805

Hansen, M., Műllerová, J., Elklit, A., & Armour, C. (2016). Can the dissociative PTSD subtype be identified across two distinct trauma samples meeting caseness for PTSD? *Social Psychiatry and Psychiatric Epidemiology*, *51*(8), 1159-1169. https://doi.org/10.1007/s00127-016-1235-2

Hansen, M., Ross, J., & Armour, C. (2017). Evidence of the dissociative PTSD subtype: A systematic literature review of latent class and profile analytic studies of PTSD. *Journal of Affective Disorders, 213*, 59-69. https://doi.org/10.1016/j.jad.2017.02.004

Harricharan, S., Nicholson, A. A., Thome, J., Densmore, M., McKinnon, M. C., Théberge, J., … Lanius, R. A. (2020). PTSD and its dissociative subtype through the lens of the insula: Anterior and posterior insula resting-state functional connectivity and its predictive validity using machine learning. *Psychophysiology*, *57*(1), e13472. https://doi.org/10.1111/psyp.13472

Higgins, J. P., & Thompson, S. G. (2002). Quantifying heterogeneity in a meta-analysis. *Statistics in Medicine*, *21*(11), 1539–1558. https://doi.org/10.1002/sim.1186

Higgins, J. P., Thomas, J., Chandler, J., Cumpston, M., Li, T., Page, M. J., & Welch, V. A. (2012). Cochrane Handbook for Systematic Reviews of Interventions version 6.2 (updated February 2021). *Cochrane, 2021*. Retrieved from www.training.cochrane.org/handbook

Hill, S. B., Wolff, J. D., Bigony, C. E., Winternitz, S. R., Ressler, K. J., Kaufman, M. L., & Lebois, L. A. (2020). Dissociative subtype of posttraumatic stress disorder in women in partial and residential levels of psychiatric care. *Journal of Trauma and Dissociation*, *21*(3), 305-318. https://doi.org/10.1080/15299732.2019.1678214

Hoy, D., Brooks, P., Woolf, A., Blyth, F., March, L., Bain, C., … Buchbinder, R. (2012). Assessing risk of bias in prevalence studies: Modification of an existing tool and evidence of interrater agreement. *Journal of Clinical Epidemiology*, *65*(9), 934– 939. https://doi.org/10.1016/j.jclinepi.2011.11.014

Hyland, P., Shevlin, M., Brewin, C. R., Cloitre, M., Downes, A. J., Jumbe, S., … Roberts, N. P. (2017). Validation of posttraumatic stress disorder (PTSD) and complex PTSD using the International Trauma Questionnaire. *Acta Psychiatrica Scandinavica*, *136*(3), 313–322. https://doi.org/10.1111/acps.12771

Hyland, P., Shevlin, M., Fyvie, C., Cloitre, M., & Karatzias, T. (2020). The relationship between ICD-11 PTSD, complex PTSD and dissociative experiences. *Journal of Trauma and Dissociation*, *21*(1), 62-72. https://doi.org/10.1080/15299732.2019.1675113

Kenny, M. C., Helpingstine, C., Long, H., & Harrington, M. C. (2020). Assessment of commercially sexually exploited girls upon entry to treatment: Confirmed vs. at risk

victims. *Child Abuse and Neglect*, *100*, 104040. https://doi.org/10.1016/j.chiabu.2019.104040

Kerig, P. K., Charak, R., Chaplo, S. D., Bennett, D. C., Armour, C., Modrowski, C. A., & McGee, A. B. (2016). Validation of the factor structure of the adolescent dissociative experiences scale in a sample of trauma-exposed detained youth. *Psychological Trauma: Theory, Research, Practice, and Policy*, *8*(5), 592-600. https://doi.org/10.1037/tra0000140

Kim, D., Kim, D., Lee, H., Cho, Y., Min, J. Y., & Kim, S. H. (2019). Prevalence and clinical correlates of dissociative subtype of posttraumatic stress disorder at an outpatient trauma clinic in South Korea. *European Journal of Psychotraumatology*, *10*(1), 1657372. https://doi.org/10.1080/20008198.2019.1657372

Lanius, R. A., Wolf, E. J., Miller, M. W., Frewen, P. A., Vermetten, E., Brand, B., & Spiegel, D. (2014). The dissociative subtype of PTSD. In M. J. Friedman, T. M. Keane, & P. A. Resick (Eds.), *Handbook of PTSD: Science and practice* (pp. 234–250). New York: The Guilford Press.

Lebois, L. A., Li, M., Baker, J. T., Wolff, J. D., Wang, D., Lambros, A. M., … Kaufman, M. L. (2021). Large-scale functional brain network architecture changes associated with trauma-related dissociation. *American Journal of Psychiatry*, *178*(2), 165-173. https://doi.org/10.1176/appi.ajp.2020.19060647

Li, Y., Hassett, A. L., & Seng, J. S. (2019). Exploring the mutual regulation between oxytocin and cortisol as a marker of resilience. *Archives of Psychiatric Nursing*, *33*(2), 164-173. https://doi.org/10.1016/j.apnu.2018.11.008

Liotti, G. (2004). Trauma, dissociation, and disorganized attachment: Three strands of a single braid. *Psychotherapy: Theory, Research, Practice, Training*, *41*(4), 472-486. https://doi.org/10.1037/0033-3204.41.4.472

Memarzia, J., Walker, J., & Meiser-Stedman, R. (2021). Psychological peritraumatic risk factors for post-traumatic stress disorder in children and adolescents: A meta-analytic review. *Journal of Affective Disorders, 282*, 1036–1047. https://doi.org/10.1016/j.jad.2021.01.016

Mergler, M., Driessen, M., Lüdecke, C., Ohlmeier, M., Chodzinski, C., Weirich, S., … TRAUMAB Studygroup. (2017). Relationships between a dissociative subtype of PTSD and clinical characteristics in patients with substance use disorders. *Journal of Psychoactive Drugs*, *49*(3), 225-232. https://doi.org/10.1080/02791072.2017.1296209

Miller, M. W., Wolf, E. J., & Keane, T. M. (2014). Posttraumatic stress disorder in DSM-5: New criteria and controversies. *Clinical Psychology: Science and Practice*, *21*(3), 208-220. https://doi.org/10.1111/cpsp.12070

Modrowski, C. A., & Kerig, P. K. (2017). Investigating factors associated with PTSD dissociative subtype membership in a sample of traumatized justice-involved youth. *Journal of Child and Adolescent Trauma*, *10*(4), 343-351. https://doi.org/10.1007/s40653-017-0153-0

Mulder, R. T., Beautrais, A. L., Joyce, P. R., & Fergusson, D. M. (1998). Relationship between dissociation, childhood sexual abuse, childhood physical abuse, and mental illness in a general population sample. *American Journal of Psychiatry, 155*(6), 806-811. https://doi.org/10.1176/ajp.155.6.806

Műllerová, J., Hansen, M., Contractor, A. A., Elhai, J. D., & Armour, C. (2016). Dissociative features in posttraumatic stress disorder: A latent profile analysis. *Psychological Trauma: Theory, Research, Practice, and Policy*, *8*(5), 601-608. https://doi.org/10.1037/tra0000148

Munn, Z., Moola, S., Riitano, D., & Lisy, K. (2014). The development of a critical appraisal tool for use in systematic reviews addressing questions of prevalence. *International*

Journal of Health Policy and Management, 3(3), 123–128. https://doi.org/10.15171/ijhpm.2014.71

Muthén, B. (2004). Latent variable analysis: Growth mixture modeling and related techniques for longitudinal data. In Kaplan, D. (Ed.), *Handbook of quantitative methodology for the social sciences* (pp. 345–368). Sage, Newbury Park, CA. http://dx.doi.org/10.4135/9781412986311.n19

Naifeh, J. A., Richardson, J. D., Del Ben, K. S., & Elhai, J. D. (2010). Heterogeneity in the latent structure of PTSD symptoms among Canadian veterans. *Psychological Assessment, 22*(3), 666-674. https://doi.org/10.1037/a0019783

Naish, B. L. (2021). *Relative efficacy of the Clinician-Administered PTSD Scale-5, the Dissociative Subtype of PTSD Scale, and the Dissociative Experiences Scales to identify the PTSD dissociative subtype* [Doctoral dissertation, Alliant International University].

National Heart Lung and Blood Institute. (2014). *Quality assessment tool for observational, cohort and cross-sectional studies.* National Heart Lung and Blood Institute. Retrieved from https://www.nhlbi.nih.gov/health-topics/study-quality-assessment-tools

Nejad, A. G., & Farahati, H. (2007). Dissociative disorders and dissociative symptoms among veterans of the Iraq-Iran war suffering from chronic post-traumatic disorder. *Neurosciences Journal, 12*(4), 318-321. Retrieved from https://nsj.org.sa/content/12/4/318

Oberski, D. (2016). Mixture models: Latent profile and latent class analysis. In *Modern statistical methods for HCI* (pp. 275-287). Springer, Cham.

Özdemir, B., Celik, C., & Oznur, T. (2015). Assessment of dissociation among combat-exposed soldiers with and without posttraumatic stress disorder. *European Journal of Psychotraumatology*, *6*(1), 26657. https://doi.org/10.3402/ejpt.v6.26657

Powers, A., Fani, N., Carter, S., Cross, D., Cloitre, M., & Bradley, B. (2017). Differential predictors of DSM-5 PTSD and ICD-11 complex PTSD among African American women. *European Journal of Psychotraumatology*, *8*(1), 1338914. https://doi.org/10.1080/20008198.2017.1338914

Putnam, F. W. (1997). *Dissociation in children and adolescents: A developmental perspective.* Guilford Press.

Putnam, F. W., Carlson, E. B., Ross, C. A., Anderson, G., Clark, P., Torem, M., … Braun, B. G. (1996). Patterns of dissociation in clinical and nonclinical samples. *Journal of Nervous and Mental Disease*, *184*(11), 673-679. https://doi.org/10.1097/00005053-199611000-00004

Richard-Malenfant, C., Douglass, A., Higginson, C., Ray, L., & Robillard, R. (2019). Dissociative subtype of post-traumatic stress disorder: Preliminary results examining sleep architecture. *Sleep Medicine*, *64*(1), S322-S323. https://doi.org/10.1016/j.sleep.2019.11.904

Richardson, L. K., Frueh, B. C., & Acierno, R. (2010). Prevalence estimates of combat-related post-traumatic stress disorder: Critical review. *Australian and New Zealand Journal of Psychiatry*, *44*(1), 4–19. https://doi.org/10.3109/00048670903393597

Ross, C. A. (2021). Problems with the dissociative subtype of posttraumatic stress disorder in DSM-5. *European Journal of Trauma and Dissociation*, *5*(4), 100081. https://doi.org/10.1016/j.ejtd.2018.08.005

Ross, J., Armour, C., Kerig, P. K., Kidwell, M. C., & Kilshaw, R. E. (2020). A network analysis of posttraumatic stress disorder and dissociation in trauma-exposed

adolescents. *Journal of Anxiety Disorders*, *72*, 102222. https://doi.org/10.1016/j.janxdis.2020.102222

Ross, J., Baník, G., Dědová, M., Mikulášková, G., & Armour, C. (2018). Assessing the structure and meaningfulness of the dissociative subtype of PTSD. *Social Psychiatry and Psychiatric Epidemiology*, *53*(1), 87-97. https://doi.org/10.1007/s00127-017-1445-2

Schiavone, F. L., Frewen, P., McKinnon, M., & Lanius, R. A. (2018). The dissociative subtype of PTSD: An update of the literature. *PTSD Research Quarterly*, *29*(3), 1-13. Retrieved from https://www.ptsd.va.gov/

Shimizu, M., & Sakamoto, S. (1986). Depersonalization in early adolescence. *Psychiatry and Clinical Neurosciences*, *40*(4), 603–608. https://doi.org/10.1111/j.1440-1819.1986.tb03174.x

Sierk, A., Manthey, A., Brakemeier, E. L., Walter, H., & Daniels, J. K. (2021). The dissociative subtype of posttraumatic stress disorder is associated with subcortical white matter network alterations. *Brain Imaging and Behavior*, *15*(2), 643-655. https://doi.org/10.1007/s11682-020-00274-x

Stein, D. J., Koenen, K. C., Friedman, M. J., Hill, E., McLaughlin, K. A., Petukhova, M., … Kessler, R. C. (2013). Dissociation in posttraumatic stress disorder: Evidence from the world mental health surveys. *Biological Psychiatry*, *73*(4), 302-312. https://doi.org/10.1016/j.biopsych.2012.08.022

Steuwe, C., Lanius, R. A., & Frewen, P. A. (2012). Evidence for a dissociative subtype of PTSD by latent profile and confirmatory factor analyses in a civilian sample. *Depression and Anxiety*, *29*(8), 689-700. https://doi.org/10.1002/da.21944

Swart, S., Wildschut, M., Draijer, N., Langeland, W., & Smit, J. H. (2020). Dissociative subtype of posttraumatic stress disorder or PTSD with comorbid dissociative

disorders: Comparative evaluation of clinical profiles. *Psychological Trauma: Theory, Research, Practice, and Policy*, *12*(1), 38-45. https://doi.org/10.1037/tra0000474

Tsai, J., Armour, C., Southwick, S. M., & Pietrzak, R. H. (2015). Dissociative subtype of DSM-5 posttraumatic stress disorder in US veterans. *Journal of Psychiatric Research*, *66-67*, 67-74. https://doi.org/10.1016/j.jpsychires.2015.04.017

van der Kolk, B. A., Pelcovitz, D., Roth, S., Mandel, F. S., McFarlane, A., & Herman, J. L. (1996). Dissociation, somatization, and affect dysregulation: The complexity of adaptation to trauma. *American Journal of Psychiatry*, *153*(7), 83-93. https://doi.org/10.1176/ajp.153.7.83

van Minnen, A., van der Vleugel, B. M., van den Berg, D. P., De Bont, P. A. J. M., de Roos, C., van der Gaag, M., & De Jongh, A. (2016). Effectiveness of trauma-focused treatment for patients with psychosis with and without the dissociative subtype of post-traumatic stress disorder. *The British Journal of Psychiatry*, *209*(4), 347-348. https://doi.org/10.1192/bjp.bp.116.185579

Verbeck, E. G. (2015). *Examining the evidence for a dissociative subtype of posttraumatic stress disorder*. [Doctoral dissertation, Alliant International University].

Viechtbauer, W. (2010). Conducting meta-analyses in R with the metafor package. *Journal of Statistical Software*, *36*(3), 1–48. https://doi.org/10.18637/jss.v036.i03

Waelde, L. C., Silvern, L., & Fairbank, J. A. (2005). A taxometric investigation of dissociation in Vietnam veterans. *Journal of Traumatic Stress, 18*(4), 359–369. https://doi.org/10.1002/jts.20034

Waller, N. G., & Ross, C. A. (1997). The prevalence and biometric structure of pathological dissociation in the general population: Taxometric and behavior genetic findings.

Journal of Abnormal Psychology, *106*(4), 499–510. https://doi.org/10.1037/0021-843X.106.4.499

Weathers, F. W., Newman, E., Blake, D. D., Nagy, L. M., Schnurr, P. P., Kaloupek, D. G., & Keane, T. M. (2004). *Clinician-administered PTSD Scale:(CAPS)*. Torrance, CA: Western Psychological Services.

Wolf, E. J., Lunney, C. A., Miller, M. W., Resick, P. A., Friedman, M. J., & Schnurr, P. P. (2012). The dissociative subtype of PTSD: A replication and extension. *Depression and Anxiety*, *29*(8), 679-688. https://doi.org/10.1002/da.21946

Wolf, E. J., Miller, M. W., Reardon, A. F., Ryabchenko, K. A., Castillo, D., & Freund, R. (2012). A latent class analysis of dissociation and posttraumatic stress disorder: Evidence for a dissociative subtype. *Archives of General Psychiatry*, *69*(7), 698-705. https://doi.org/10.1001/archgenpsychiatry.2011.1574

Wolf, E. J., Mitchel, K. S., Sadeh, N., Hein, C., Fuhrman, I., Pietrzak, R. H., & Miller, M. W. (2017). The dissociative subtype of PTSD scale: Initial evaluation in a national sample of trauma-exposed veterans. *Assessment*, *24*, 503–516. https://doi.org/10.1177/1073191115615212

World Health Organization. (2019). *ICD-11: International classification of diseases* (11th revision). Retrieved from https://icd.who.int/

Zoet, H. A., Wagenmans, A., van Minnen, A., & de Jongh, A. (2018). Presence of the dissociative subtype of PTSD does not moderate the outcome of intensive trauma-focused treatment for PTSD. *European Journal of Psychotraumatology*, *9*(1), 1468707. https://doi.org/10.1080/20008198.2018.1468707

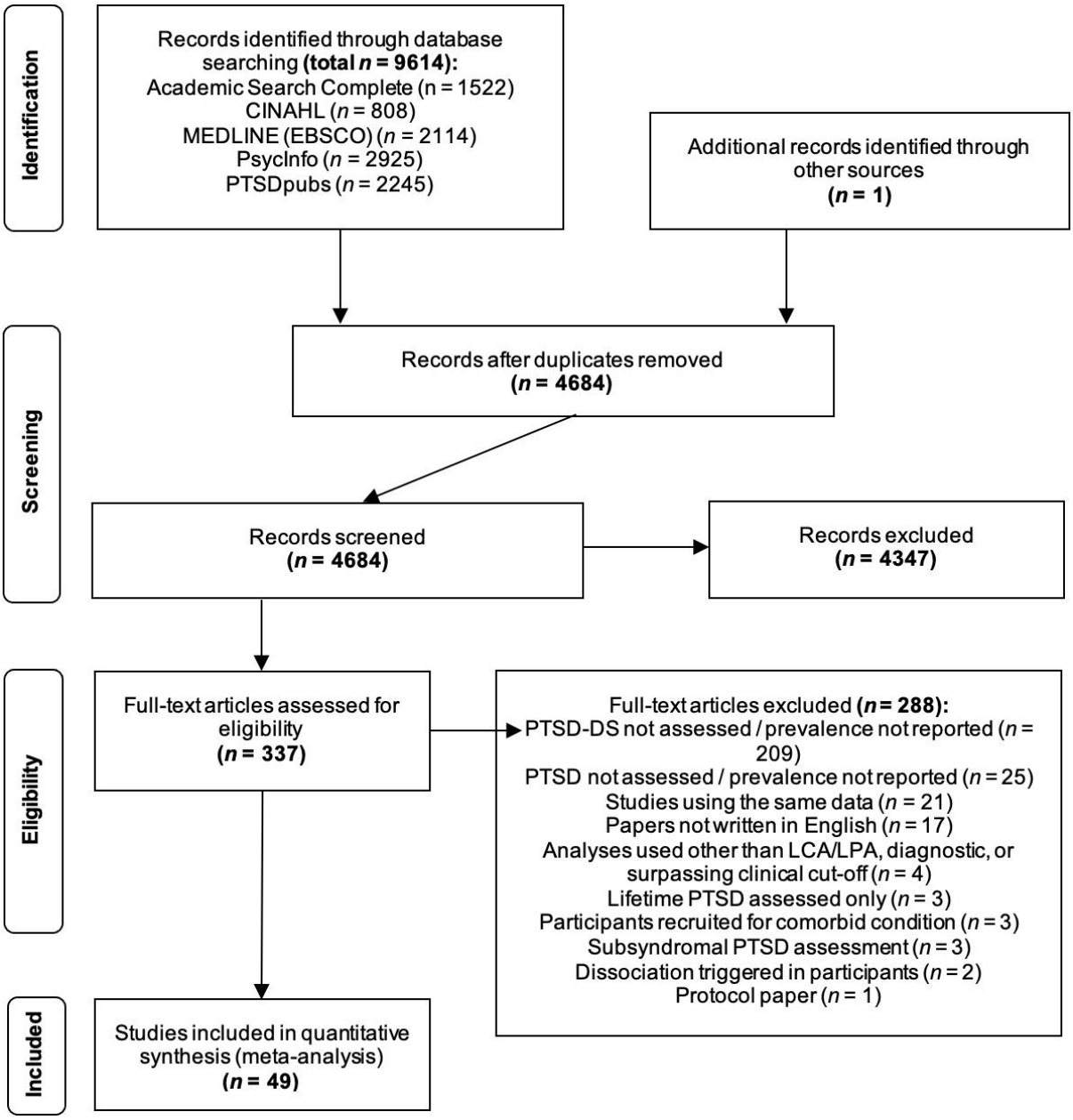

Figure 1

PRISMA diagram showing the process of study identification, screening, and inclusion (n = number of studies)

Table 1

Included sample characteristics

Sample No.	Sample	Location	Population/trauma type	Proportion female	Age			Method of PTSD assessment	PTSD measure; DSM	PTSD-DS measure; DSM-5/other criteria	*N*		
					Range	Mean (*SD*)	Age group				Total	PTSD	PTSD-DS
1	Abu-Rus, Thompson, Naish, Brown, and Dalenberg (2020)	USA	General population (T, P)	46%	NR	37.9 (10.3)	NR	Diagnosis	CAPS; DSM-5	CAPS; DSM-5	345	40	16
2	Acar, Öğülmüş, and Boysan, (2019)	Turkey	Prisoners	3%	18-75	34.5 (9.9)	Adult	Diagnosis	PCL†; DSM-5	DES†; other	399	237	115
3	Armour, Elklit, Lauterbach, and Elhai (2014)	Denmark	Sexual assault and rape (T)	100%	NR	22.4 (9.4)	Both	LPA	HTQ†; DSM-IV	TSC†; other	313	226	41
4	Armour, Karstoft, and Richardson (2014)	Canada	Military veterans (T)	6%	24-93	54.0 (19.0)	Adult	LPA	CAPS; DSM-IV	CAPS; other	432	286	59
5	Blevins, Weathers, and Witte (2014)	USA	Trauma-exposed college students	67%	18-32	20.2 (1.6)	Adult	LCA	PCL-S†; DSM-IV	MDI†; DSM-5	541	206	65
6	Boysan et al. (2017)	Turkey	Psychiatric patients (T, P)	44%	NR	29.0 (9.0)	Adult	Diagnosis	CAPS; DSM-5	CAPS; DSM-5	90	30	24
7	Briere, Scott, and Weathers (2005)	USA	Trauma-exposed community	48%	NR	45.2 (16.7)	Adult	Diagnosis	DAPS†; DSM-IV	DAPS†; other	372	23	13
8	Burton, Feeny, Connell, and Zoellner (2018)	USA	Chronic PTSD (P)	76%	NR	37.4 (11.3)	Adult	LTA (expanded version of LPA)	PSS-I; DSM-IV	DES-D†; DSM-5	200	129	24
9	Caroppo, Lanzotti, and Janiri (2021)	Italy	Asylum seekers (T)	48%	18-59	25.5 (5.6)	Adult	Diagnosis	SCID-I; DSM-IV	SCID-I; other	180	95	74
10	Choi et al. (2019)	USA	Trauma-exposed adolescents (T)	61%	12-16	14.5 (1.5)	Child	Diagnosis	UCLA PTSD-RI†; DSM-IV	TSCC-A†; DSM-5	3081	734	394
11	Choi et al. (2017)	USA	Trauma-exposed adolescents (T)	61%	12-16	14.5 (1.5)	Child	LCA	UCLA PTSD-RI†; DSM-IV	TSCC-A†; DSM-5	3081	1279	444
12	Cloitre et al. (2012)	USA	Childhood sexual and/or physical abuse (P)	100%	18-65	36.4 (9.4)§	Adult	Diagnosis	CAPS; DSM-IV	TSI†; other	104	104	28
13	Criswell, Sherman, and Krippner (2018)	USA	Psychiatric patients (T, P)	73%	20-65	44.0 (NR)	Adult	Diagnosis	CAPS; DSM-5	CAPS; DSM-5	30	30	13
14	Daniels et al. (2016)	Germany	Trauma-exposed community (P)	61%	23-58	38.0 (11.8)§	Adult	Diagnosis & clinical cut-off	CAPS; DSM-IV	CAPS; DSM-5	59	59	15
15	Dorahy et al. (2017)	Northern Ireland	Psychiatric patients (T, P)	32%	19-65‡	40.4 (12.4)	Adult	Diagnosis	Clinical diagnosis; NR	DES†; other	210	65	27
16	Durham, Byllesby, Elhai, and Wang (2020)	USA & Canada	Trauma-exposed community	63%	18-74	36.0 (12.7)	Adult	LPA	PCL†; DSM-5	DES-II†; DSM-5	360	204	51
17	Eidhof et al. (2019)	Netherlands	Trauma-exposed community (T, P)	33%	19-83	48.8 (12.1)	Adult	Diagnosis	CAPS; DSM-5	CAPS¶; DSM-5	320	131	31

18	Frewen et al (2015)	Canada	Probable diagnosis of PTSD (T)	71%	NR	33.1 (10.8)	Adult	LPA	PCL[†]; DSM-5	Dissociation-TRASC item list[†]; DSM-5	557	311	183
19	Frewen, Zhu, and Lanius (2019)	Canada	Community	52%	NR	36.5 (12.6)	Adult	Diagnosis	PCL[†]; DSM-5	Dissociation-TRASC item list[†]; DSM-5	418	98	41
20	Guetta et al. (2019)	USA	Military veterans (P)	16%	21-75	53.8 (11.4)	Adult	LPA	PCL, Trauma Assessment from the NSES; DSM-5	CAPS[¶]; DSM-5	209	209	31
21	Hansen, Hyland, and Armour (2016)	Denmark	Bank employees following robbery	62%	20-65	42.1 (12.5)	Adult	LCA	HTQ[†]; DSM-IV	TSC[†]; DSM-5	371	67	0
22	Hansen et al. (2019)	Denmark	Whiplash injury	62%	18-89	37.5 (13.9)	Adult	Diagnosis	HTQ[†], TSC[†]; DSM-5	TSC[†]; DSM-5	234	21	7
23	Hansen et al. (2019)	Denmark	Whiplash injury	62%	18-89	37.5 (13.9)	Adult	LCA	HTQ[†], TSC[†]; DSM-5	TSC[†]; DSM-5	234	27	0
24	Hansen, Müllerová et al. (2016)	Denmark	Whiplash injury (P)	78%	NR	43.6 (10.4)	Adult	LCA	HTQ[†], TSC[†]; DSM-5	TSC[†]; DSM-5	476	476	178
25	Hansen, Müllerová, et al. (2016)	Denmark	Incest during childhood (T, P)	88%	NR	35.9 (11.0)	Adult	LCA	HTQ[†], TSC[†]; DSM-5	TSC[†]; DSM-5	311	311	139
26	Harricharan et al. (2020)	Canada	Trauma-exposed community (P)	63%	18-60[‡]	39.6 (12.5)[§]	Adult	Diagnosis & clinical cut-off	CAPS; DSM-IV & 5	CAPS; DSM-5	184	133	49
27	Hill et al. (2020)	USA	Trauma-exposed women (T)	100%	18-62	34.1 (13.2)	Adult	Clinical cut-off	PCL[†]; DSM-5	DSPS[†]; DSM-5	104	88	73
28	Kenny et al. (2020)	USA	Commercial sexual exploitation (T)	100%	12-18	16.6 (1.2)[‡]	Child	Diagnosis	UCLA PTSD-RI[†]; DSM-5	UCLA PTSD-RI[†]; DSM-5	56	15	11
29	Kenny et al. (2020)	USA	At risk of commercial sexual exploitation (T)	100%	12-18	15.3 (1.6)[‡]	Child	Diagnosis	UCLA PTSD-RI[†]; DSM-5	UCLA PTSD-RI[†]; DSM-5	40	3	3
30	Kim et al. (2019)	South Korea	Psychiatric patients (T, P)	64%	16-70	38.7 (12.7)	Both	Diagnosis	CAPS; DSM-5	CAPS; DSM-5	249	249	82
31	Lebois et al. (2021)	USA	Interpersonal childhood maltreatment (T, P)	100%	18-61	34.4 (12.2)	Adult	Diagnosis	CAPS; DSM-5	CAPS; DSM-5	65	65	47
32	Li, Hasset, and Seng (2019)	USA	Pregnant women	100%	NR	NR	NR	Diagnosis	National Women's Study PTSD Module; DSM-IV	DES-T[†]; other	22	10	4
33	Mulder, Beautrais, Joyce, and Fergusson (1998)	New Zealand	Community	NR	NR	NR	Adult	Diagnosis	SCID; DSM-III	DES[†]; other	1028	9	3
34	Müllerová et al. (2016)	USA & Canada	Trauma-exposed community	56%	NR	35.2 (11.9)	NR	LPA	PCL[†]; DSM-5	DSS[†]; other	309	215	83
35	Naish et al. (2021)	USA	Trauma-exposed community	45%	18-65	40.5 (11.8)	Adult	Diagnosis	CAPS; DSM-5	CAPS; DSM-5	100	63	31

36	Nejad et al. (2007)	Iran	Military veterans (P)	0%	NR	41.5 (5.1)	Adult	Diagnosis	Clinical diagnosis; DSM-IV	DES†; other	260	130	42
37	Özdemir, Celik, and Oznur (2015)	Turkey	Serving soldiers (P)	0%	NR	30.3 (5.6)	Adult	Diagnosis	SCID-I; DSM-IV	DES†; other	184	84	59
38	Powers et al. (2017)	USA	Trauma-exposed women	100%	18-65‡	39.4 (11.6)	Adult	Diagnosis	CAPS; DSM-5	CAPS; DSM-5	190	72	2
39	Putnam et al. (1996)	USA & Canada	Psychiatric patients - (T, P)	60%	NR	39.0 (NR)	Adult	Diagnosis	Clinical diagnosis; DSM-III	DES†; other	1566	116	54
40	Richard-Malenfant, Douglass, Higginson, Ray, and Robillard (2019)	Canada	Military veterans (P)	36%	NR	49.3 (9.3)	Adult	Diagnosis	CAPS; DSM-5	CAPS; DSM-5	14	14	6
41	Ross, Armour, Kerig, Kidwell, and Kilshaw (2020)	USA	Trauma-exposed youth in detention centres	25%	12-19	16.0 (1.3)	Child	Diagnosis	UCLA PTSD-RI†; DSM-5	UCLA PTSD-RI†; DSM-5	448	197	119
42	Ross et al. (2018)	Slovakia	Trauma-exposed university students	83%	NR	22.7 (5.1)	Adult	LPA	PCL†; DSM-5	DSS†; other	689	308	24
43	Sierk, Manthey, Brakemeier, Walter, and Daniels (2021)	Germany	Childhood interpersonal abuse (P)	100%	NR	40.0 (9.8)	Adult	Diagnosis	CAPS; DSM-IV	DES†, CDS-30†, CDS-state†, CAPS, SCID-D; other	42	42	23
44	Stein et al. (2013)	Global	Community	NR	NR	NR	Adult	Diagnosis	WHO CIDI; DSM-IV	WHO CIDI; DSM-5	25018	747	108
45	Steuwe et al. (2012)	Canada	Trauma-exposed community (T, P)	90%	NR	37.9 (9.4)	NR	Diagnosis	CAPS; DSM-IV	CAPS; DSM-5	134	134	47
46	Swart et al. (2020)	Netherlands	Psychiatric patients (T)	77%	18-68	34.2 (11.9)§	Adult	Diagnosis	CAPS; DSM-IV	DES†; DSM-5	150	84	18
47	Tsai et al. (2015)	USA	Military veterans	NR	20-94‡	60.8 (15.2)§	Adult	Diagnosis	PCL†; DSM-5	CAPS†; DSM-5	1484	64	12
48	van der Kolk et al. (1996)	USA	Psychiatric patients (T)	67%	15+	37.1 (15.0)	Both	Diagnosis	SCID & DIS PTSD modules; DSM-III	SIDES; other	395	182	149
49	Verbeck et al. (2015)	USA	Psychiatric patients (T)	49%	18-69	44.0 (10.9)	Adult	Diagnosis	CAPS; DSM-IV	TSI-2†, DES-R†; other	100	47	29
50	Wolf, Lunney et al. (2012)	USA	Military veterans (P)	0%	44-74	50.6 (3.6)	Adult	LPA	CAPS; DSM-IV	CAPS; other	360	360	56
51	Wolf, Lunney et al. (2012)	USA	Military veterans (P)	100%	22-78	44.8 (9.4)	Adult	LPA	CAPS; DSM-IV	TSI†; DSM-5	284	284	85
52	Wolf, Miller et al. (2012)	USA	Military veterans & their partners	36%	21-75‡	51.5 (11.2)‡	Adult	LPA	CAPS; DSM-IV	CAPS; other	492	239	30
53	Zoet et al. (2018)	Netherlands	Psychiatric patients (T)	70%	19-63‡	38.2 (10.9)§	Adult	Clinical cut-off	CAPS; DSM-IV	CAPS¶; DSM-5	168	168	38

Note. SD = standard deviation, T = treatment-seeking inclusion criteria; P = diagnosis of PTSD inclusion criteria; NR = Not Reported; CAPS = Clinician Administered Post-traumatic Stress Disorder Scale; PCL =Post-traumatic Stress Disorder Checklist; DES = Dissociative Experiences Scale; LPA = latent profile analysis; HTQ = Harvard Trauma Questionnaire; TSC = Trauma Symptom Checklist; LCA = latent class analysis; PCL-S = Post-traumatic Stress Disorder Checklist Specific; MDI = Multiscale Dissociation Inventory; DAPS = Detailed Assessment of Posttraumatic Stress; DES-D = depersonalization/derealisation subscale of the DES; PSS = Post-traumatic Stress Disorder Symptom Scale; PSS-I = PTSD Symptom Scale-Interview, SCID-I = Structured Clinical Interview for the DSM-IV Axis I Disorders; UCLA PTSD-RI = University of California at Los Angeles Posttraumatic Stress Disorder Reaction Index; TSCC-A = Trauma Symptom Checklist for Children-Alternate Version; TSI Trauma Symptom Inventory; TRASC = trauma-related altered states of consciousness; NSES = National Stressful Events Survey; DES-T = 8-item taxon version of the Dissociative Experiences Scale; SCID = Structured Clinical Interview for DSM; DSPS = Dissociative Subtype of PTSD Scale; DSS = Dissociative Symptoms Scale; CDS = Cambridge Depersonalization Scale; SCID-D = Structured Clinical Interview for DSM-IV Dissociative Disorders; WHO CIDI = World Health Organisation Composite International Diagnostic Interview; DIS = Diagnostic Interview Schedule; SIDES = Structured Interview for Disorders of Extreme Stress; DES-R = Dissociative Experiences Scale – Revised

† Measure completed via self-report

‡ Information acquired via correspondence with study author(s)

§ Mean and standard deviation values combined (Altman, Machin, Bryant, & Gardner, 2013; Higgins et al., 2012)

¶ Multiple measures used, however CAPS chosen as the gold standard (Weathers et al., 2004)

Table 2

Pooled prevalence of PTSD-DS as a proportion of PTSD for all samples (k = 51)

Meta-analysis subgroup	*k*	*n*	Pooled Prevalence (%)	95% CI	Q test	I^2
All samples†	51	8214	38.1	(31.5, 45.0)	1602.0*	97.4
Method of PTSD-DS Assessment (β = -0.2418 [95% CI = -0.3780, -0.1056], p = 0.0005)						
Diagnosis-based/clinical cut-off	36	4383	45.5	(37.7, 53.4)	923.6*	96.0
LCA/LPA†	15	3831	22.8	(14.8, 32.0)	482.5*	97.6
PTSD DSM criteria used†‡ (β = -0.0871 [95% CI = -0.2328, 0.0586], p = 0.24)						
DSM-5	24	3451	42.5	(32.4, 53.0)	624.6*	97.3
DSM-III or DSM-IV	25	4565	34.1	(24.9, 43.9)	936.0*	97.8
Dissociation criteria† (β = 0.0342 [95% CI = -0.1113, 0.1796], p = 0.65)						
DSM-5 (Dereal / Depers)	32	5436	36.9	(28.5, 45.8)	895.2*	97.6
Broader dissociation	19	2778	40.2	(29.5, 51.4)	698.3*	97.1
Dissociation measure completion†§ (β = 0.0281 [95% CI = -0.1189, 0.18], p = 0.7080)						
Self-report	31	4997	38.8	(30.6, 47.3)	778.8*	97.2
Interview	19	3175	36.2	(24.8, 48.5)	690.4*	97.9
Age group†¶ (β = 0.3587 [95% CI = 0.0814, 0.6360], p = 0.01)						
Child	4	949	62.9	(39.6, 83.3)	11.4*	82.0
Adult	40	6209	35.0	(27.8, 42.6)	1121.1*	97.3
Occupation† (β = -0.1439 [95% CI = -0.3227, 0.0350], p = 0.11)						
Military	9	1670	26.9	(16.2, 39.1)	138.1*	96.3
Civilian	42	6544	40.7	(33.1, 48.5)	1325.7*	97.4
Trauma type† (β = 0.1011 [95% CI = -0.1163, 0.3185], p = 0.36)						
Interpersonal	6	763	46.8	(28.3, 65.7)	101.9*	95.9
Other	45	7451	37.0	(29.9, 44.3)	1494.9*	97.5

Note. k = number of samples; n = number of participants; CI = confidence interval; LCA = latent class analysis, LPA = latent profile analysis; Dereal = derealisation; Depers = depersonalisation

* $p < 0.0001$, where the degrees of freedom (df) = k - 1

† Samples 11 and 23 removed to avoid duplication of population samples

‡ Sample 15 removed as no PTSD DSM criteria reported, sample 26 removed as used both DSM-IV and DSM-5 when assessing for PTSD

§ Sample 43 removed as a mix of self-report and interview measures were used

¶ Several samples were removed due to populations formed of both children and adults, or age group not reported

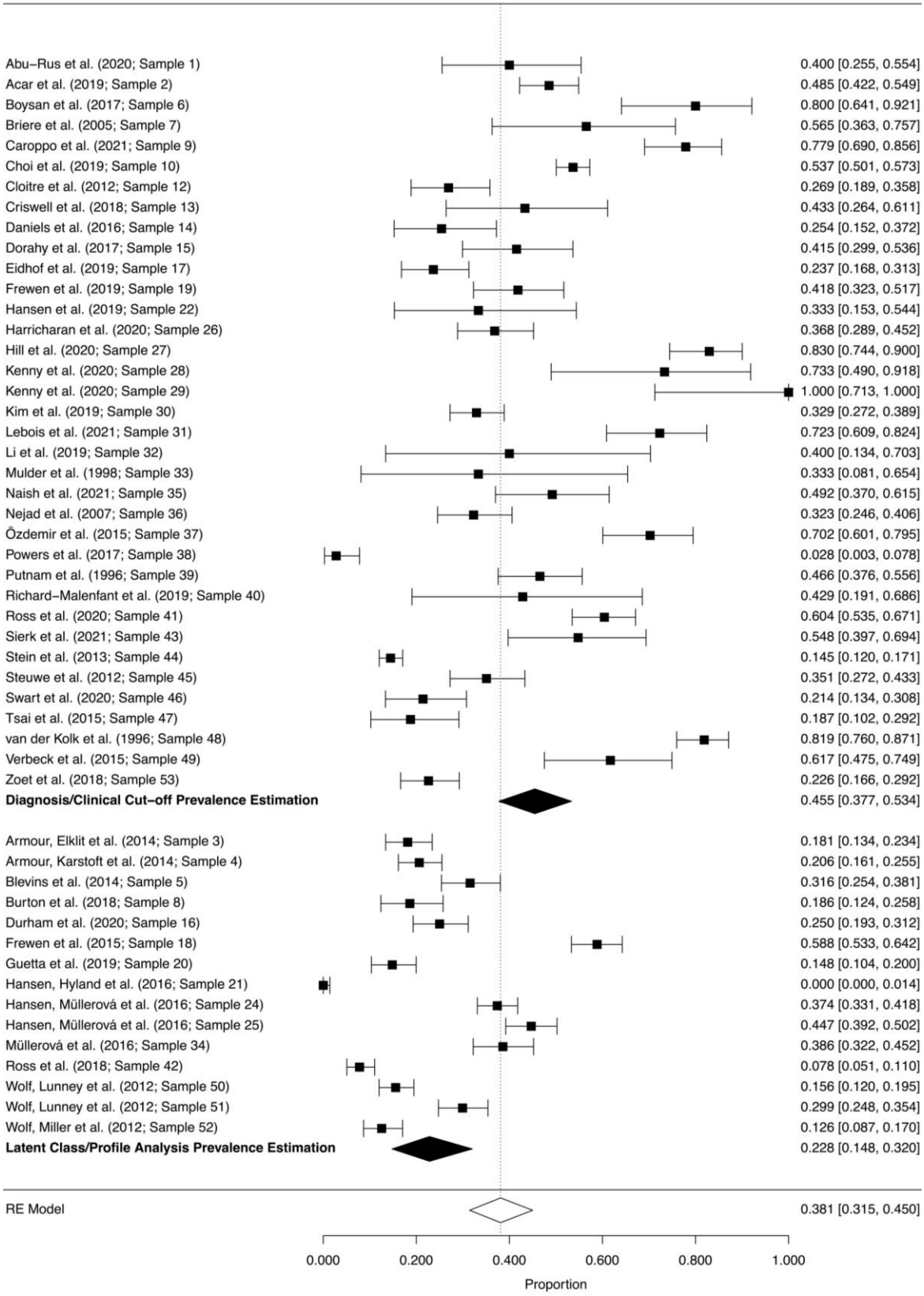

Figure 2

Forest plot of PTSD-DS prevalence estimates grouped by PTSD-DS assessment method (samples 11 and 23 removed to avoid duplication of population samples).

Table 3

Pooled prevalence of PTSD-DS as a proportion of PTSD for all diagnostic and clinical cut-off samples (i.e., excluding LCA and LPA samples; k = 36)

Meta-analysis subgroup	*k*	*n*	Pooled Prevalence (%)	95% CI	Q test	I^2
PTSD DSM criteria used† (β = -0.0363 [95% CI = -0.2065, 0.1338], p = 0.68)						
DSM-5	17	1417	48.1	(35.0, 61.3)	288.3*	95.7
DSM-III or DSM-IV	17	2768	44.2	(33.6, 55.1)	623.7*	96.5
Dissociation criteria (β = 0.1135 [95% CI = -0.0471, 0.2740], p = 0.17)						
DSM-5 (Dereal / Depers)	23	3239	41.7	(31.5, 52.2)	622.8*	96.9
Broader dissociation	13	1144	52.9	(42.5, 63.3)	173.2*	91.4
Dissociation measure completion‡ (β = 0.0479 [95% CI = -0.1171, 0.2130], p = 0.57)						
Self-report	20	2260	47.0	(37.8, 56.3)	233.1*	93.9
Interview	15	2081	42.7	(29.2, 56.8)	576.9*	97.3
Age group§ (β = 0.2794 [95% CI = 0.0115, 0.5474], p = 0.04)						
Child	4	949	62.9	(50.2, 74.7)	11.4**	82.0
Adult	27	2819	42.1	(33.4, 51.2)	616.6*	95.4
Occupation (β = -0.0574 [95% CI = -0.3115, 0.1968], p = 0.66)						
Military	4	292	40.5	(19.1, 63.9)	49.8*	93.2
Civilian	32	4091	46.1	(37.8, 54.6)	873.7*	96.3
Trauma type (β = 0.1184 [95% CI = -0.1345, 0.3714], p = 0.36)						
Interpersonal only	4	226	55.9	(33.4, 77.2)	41.4*	90.5
Other	32	4157	44.2	(35.6, 52.6)	876.4*	96.3

Note. k = number of samples; n = number of participants; CI = confidence interval; Dereal = derealisation; Depers = depersonalisation

* $p < 0.0001$, where the degrees of freedom (df) = $k - 1$

** $p < 0.01$, where the degrees of freedom (df) = $k - 1$

† Sample 15 removed as no PTSD DSM criteria reported, sample 26 removed as used both DSM-IV and DSM-5 when assessing for PTSD

‡ Sample 43 removed as a mix of self-report and interview measures were used

§ Several samples were removed due to populations formed of both children and adults, or age group not reported