European Journal of Trauma & Dissociation 7 (2023) 100310

Available online at
ScienceDirect
www.sciencedirect.com

Elsevier Masson France
EM|consulte
www.em-consulte.com

Review Article

Childhood trauma in patients with Dissociative Identity Disorder: A systematic review of data from 1990 to 2022
Psychotraumatisme dans l'enfance et survenue du trouble dissociatif de l'identité: une revue systématique des données publiées entre 1990 et 2022

Aurégane Raison, Soubelet Andrea*

University of Côte d'Azur, 98 boulevard Edouard Herriot, 06204 Nice Cedex 3, Nice, France

ARTICLE INFO

Article History:
Received 6 October 2022
Revised 30 November 2022
Accepted 14 December 2022

Keywords:
Dissociative identity disorder
Childhood trauma
Childhood maltreatment
Child abuse

ABSTRACT

Background: Dissociative Identity Disorder (DID) is an alteration of identity and memory that results in cognitive, emotional, and behavioral changes. A lack of metacognition may explain those alterations subsequent to severe, chronic, and early traumas. This systematic review aims to: 1. identify reported childhood traumas involved in the onset of DID, 2. determine if patients with DID experience more reported traumas than do non-DID populations, and 3. determine if studies have examined the relation between reported age of exposure to traumas and DID emergence.
Method: Searches were conducted in PubMed, ProQuest, PsycInfo, ScienceDirect, and Scopus. Eligible articles were clinical trials, randomized control trials, observational studies, theses, or dissertations published in English between 1990 and 2022. Eight articles were included and assessed with the Quality Assessment Tool for Observational Cohort or Cross-Sectional Studies.
Results: Overall, those with DID and dissociative disorders reported more emotional and physical neglect, emotional abuse, physical abuse, and sexual abuse than those with PTSD, schizophrenic disorders, panic disorders, and complex partial epilepsy or control. Only two studies stressed early reported age as a factor in trauma exposition among the DID population. Reinders et al. (2018) established reported childhood traumas between 0 and 6 years, whereas Scroppo et al. (1998) estimated averages of 3 years for physical abuse and sexual abuse.
Conclusions: DID seems to be more correlated to reported childhood traumas than other disorders, and two studies support the hypothesis that they correlate with traumas occurring at early ages. Nevertheless, more research is required because DID continues to be understudied.

Mots-clés:
Trouble dissociatif de l'identité
Traumatisme dans l'enfance
malTraitance dans l'enfance
Violence dans l'enfance
Abus dans l'enfance

RÉSUMÉ

Rationnel : Le trouble dissociatif de l'identité (TDI) est une altération de l'identité et de la mémoire caractérisée par des changements cognitifs, émotionnels et comportementaux. Une défaillance métacognitive peut expliquer ces altérations consécutives à des traumatismes graves, chroniques et précoces. Cette revue systématique vise à: 1. identifier les traumatismes de l'enfance impliqués dans l'apparition du TDI; 2. déterminer si les personnes atteintes de TDI subissent plus de traumatismes que les autres populations; et 3. déterminer si les traumatismes précoces facilitent l'apparition du TDI.
Méthode : Les recherches ont été menées dans PubMed, ProQuest, PsycInfo, ScienceDirect et Scopus. Les articles éligibles étaient des essais cliniques, des essais contrôlés randomisés, des études observationnelles, des thèses ou des mémoires publiés en anglais entre 1990 et 2022. Huit articles ont été inclus et évalués avec l'outil d'évaluation de la qualité pour les études de cohorte observationnelle ou transversales.
Résultats : Dans l'ensemble, les personnes atteintes de TDI et de troubles dissociatifs ont signalé plus de négligence émotionnelle et physique, de violence émotionnelle, de violence physique et d'abus sexuel que celles atteintes de Trouble de Stress Post Traumatique, de troubles schizophréniques, de troubles paniques et

Contribution statement: A.R. & A.S. contributed to the design and implementation of the research. A.R. extracted the data. A.R. & A.S contributed to the analysis of the results, and to the writing of the manuscript.

* Corresponding author.
E-mail address: andrea.soubelet@univ-cotedazur.fr (S. Andrea).

https://doi.org/10.1016/j.ejtd.2022.100310

d'épilepsie. Seules deux études ont mis l'accent sur le jeune âge comme facteur d'exposition aux traumatismes parmi la population TDI. Reinders et al. (2018) ont établi des traumatismes infantiles entre 0 et 6 ans, alors que Scropo et al. (1998) ont estimé des moyennes de 3 ans pour les abus physiques et les abus sexuels. *Conclusions :* Le TDI semble être plus corrélé aux traumatismes de l'enfance qu'aux autres troubles, et deux études soutiennent l'hypothèse selon laquelle ils sont corrélés aux traumatismes survenant à un âge précoce. Néanmoins, des recherches supplémentaires sont nécessaires car le TDI continue d'être sous-étudié.

1. Introduction

According to the Diagnostic and Statistical Manual of Mental Disorders (DSM-V; (APA, 2013), Dissociative Identity Disorder (DID) is defined as an identity's discontinuity, characterized by two or more distinct personality states and several alterations such as behavior, cognition, affect, memory, perception and/or sensorimotor changes. Memory impairment is defined as frequent and unusual forgetfulness in regard to personal information and recall of daily or traumatic events (APA, 2013).

Indeed, dissociative self-states can feel like of different ages, genders, personalities and functions (e.g., Coons, 1986a; McAllister, 2000; McDowell, 1999; Ross & Norton, 1989; Ross et al., 1989). The transition from one self-state to another can be marked by several changes. For instance, Merckelbach et al. (2002) stressed changes in handwriting, voice and behavior. In addition, there are typically different emotional, sensory-motor, heart rate and blood pressure responses (e.g., Reinders et al., 2006; Şar et al., 2017), as well as fluctuating brain activations between self-states (Merckelbach et al., 2002; Şar et al., 2017). In DID, there is a total amnesia of the experiences created in a specific self-state when the individual finds himself in another self-state (e.g., Forrest, 2001; McDowell, 1999; Merckelbach et al., 2002; Morton, 2018; WHO, 2021). In partial DID, indicated in ICD 11, amnesia may not be observed, leading the patient to have some degree of awareness of their various dissociative self-states.

Some authors have also defined DID as a complex, chronic post-traumatic stress disorder (PTSD) beginning in childhood (e.g., Brand et al., 2014; Dorahy et al., 2014; Şar et al., 2017). It occurs as a result of early, repeated, and severe instances of abuse and/or neglect (e.g., Anderson & Alexander, 1996; Anderson et al., 1993; Brand et al., 2014; Dorahy et al., 2014; Ellason et al., 1996; McDowell, 1999; Middleton & Butler, 1998; Ross et al., 1991; Şar et al., 2017; Şar et al., 1996; Stuppy, 1996). Repeated exposure to a severely aversive environment leads the brain to decontextualize processing of cognitive and/or emotional states as well as memories, thus promoting the creation of dissociative self-states (e.g., Brand & Loewenstein, 2014; Forrest, 2001; Putnam, 1997; Şar et al., 2017).

However, most studies have focused on sexual and physical assaults, although other types of traumas, – such as verbal violence and neglect, – may have the same psychological effects as do these assaults. Two objectives of the current review were to determine whether individuals with DID have experienced more reported childhood traumas than have other populations and to examine whether all the types of reported traumas may contribute to the development of DID.

The main model explaining the relationship between trauma and dissociation, including dissociative self-states, is the structural dissociation theory of Janet (1889). From the perspective of Janet, two broad categories of self-states can be distinguished: neutral and trauma-related personalities. A neutral personality state is characterized by a lack of personalization due to amnesia of traumatic events facilitating the individual's daily functioning, while a trauma-related personality state is characterized by the presence of traumatic memories (e.g., Binet et al., 2022; Boon & Van der Hart, 2016; Reinders et al., 2006; Vissia et al., 2016).

Metacognition is involved in the consolidation of a sense of self and the integration of memories according to their context (e.g., Brand & Loewenstein, 2014; Forrest, 2001; Şar et al., 2017). Since metacognitive processes seem to be impacted in individuals with DID (e.g., Brand & Loewenstein, 2014; Forrest, 2001; Putnam, 1997; Şar et al., 2017), it is possible that the sense of self is not consolidated in these individuals because of dysfunctional metacognition. It is noteworthy that metacognition also refers to the abilities of monitoring, appraising, and controlling the products and processes of cognitions and inner events. When it is dysfunctional, metacognition impacts beliefs as well as the awareness of thoughts and cognitive processes such as memory or attention (e.g., Sun et al., 2017); this could account for several DID-related symptoms.

Some authors have identifed the developmental period of metacognition as three to four years (e.g., Samuels et al., 2006), while others suggest between three and five years (e.g., Whitebread et al., 2009) or five to six years (e.g., Chernokova, 2014). Therefore, the question of the age of exposure is of great relevance because it is often supposed that traumas related to DID occur during childhood (e.g., Brand et al., 2014; Dorahy et al., 2014; Şar et al., 2017), and thus in a period of immaturity of metacognition.

There does not appear to be a consensus on the age of exposure to violence. For example, Anderson et al. (1993) reported an average age of 4.6 years for physical abuse exposure and 4.9 years for sexual abuse exposure in people with DID. Ross et al. (1991) diagnosed 102 individuals with DID, 50% of whom reported the onset of physical and sexual abuse before the age of 5, and indicated it had been perpetrated over an average of 10 years. Stuppy's (1996) thesis reported that individual meeting the DSM-III criteria for multiple personality disorder were exposed at an average age of 6 years and over a period of 10 years to all types of traumas. Therefore, the third objective of the current review was to determine whether there is any study on the relationship between reported age of trauma exposure and DID emergence.

1.1. Controversies

The emergence of DID has long been discussed through the lenses of trauma and iatrogenic theories (e.g., Blihar et al., 2020; Brand & Loewenstein, 2014; Dalenberg et al., 2012; Vissia et al., 2016). The former posits dissociation results from traumatic events, while the latter hypothesizes dissociation may be due to suggestibility of therapies, malingering, or false memories (e.g., Blihar et al., 2020; Brand & Loewenstein, 2014; Dalenberg et al., 2012; Vissia et al., 2016).

One argument in favor of the trauma theory is the strong association observed between trauma and dissociative symptoms (e.g., Dalenberg et al., 2012; Dimitrova et al., 2020; Santo & Pio Abreu, 2007; Vissia et al., 2016). On the one hand, the narrative review by Dalenberg et al. (2012) provides support to the trauma theory by showing associations between trauma and dissociation; the authors reported a lack of effect of suggestibility. Vissia et al. (2016) also concluded on a lack of effect of suggestibility, and then provided no support to the iatrogenic theory. Furthermore, some tools such as the Minnesota Multiphasic Personality Inventory (e.g., Brand & Chason, 2015) or the Test of Memory Malingering (e.g., Brand et al., 2019) can distinguish between individuals with DID and malingerers, although the latter are trained to imitate DID (e.g., Brand & Chason, 2015; Brand et al., 2019).

Validated diagnostic tools, such as the Structural Clinical Interview for DSM-IV Dissociative Disorders (SCID-D), exist to assess the symptoms of dissociative disorders (e.g., Mychailyszyn et al., 2021). DID can be differentiated from other disorders such as PTSD or borderline personality disorder (e.g., Laddis et al., 2017) by the presence of dissociative self-states and distinct brain activations (e.g., Blihar et al., 2020; Reinders et al., 2019). It is also possible to distinguish DID from malingering (e.g., Brand & Chason, 2015; Brand et al., 2019). Moreover, assessment tools, such as the Dissociative Disorders Interview Schedule (Ross et al., 1990) or the Multidimensional Inventory of Dissociation (Dell, 2006) help distinguishing between DID and other pathologies, such as PTSD, borderline personality disorder, dissociative disorders, and somatic disorders.

The dissociative symptoms in DID seem to be more severe than those seen in cases of PTSD (e.g., Dimitrova et al., 2020; Vissia et al., 2016). Thus, to support the DID hypothesis, additional scales can be used. Indeed, DID also seems to be characterized by depersonalization and derealization symptoms (e.g., Gingrich, 2009; McAllister, 2000; Şar et al., 2017). For example, Lebois et al. (2019) reported 87% of individuals manifesting DID have experiences of not recognizing themselves in a mirror and feel a low level of familiarity with themselves. These symptoms can be assessed using the Dissociative Experience Scale (DES) (e.g., Carlson & Putnam, 1987; Van IJzendoorn & Schuengel, 1996). When used in conjunction with a structured or semi-structured interview, the Dissociative Experience Scale Taxon will identify false positives (e.g., Ross, 2021). Finally, individuals with DID seemed to report more somatoform symptoms (e.g., Boon & Van der Hart, 2016; Dimitrova et al., 2020; Şar et al., 2017) and had a high score to the Somatoform Dissociation Questionnaire (SDQ-20) (e.g., Santo & Pio Abreu, 2007).

Despite the presence of valid psychometric tools and arguments supporting the validity of DID, the disorder often remains misdiagnosed or underdiagnosed (e.g., Boon & Van der Hart, 2016; Gentile et al., 2013), likely due to multiple comorbidities (e.g., Rodewald et al., 2011) such as PTSD (e.g., Bozkurt et al., 2015), personality disorders (e.g., Johnson et al., 2006), especially borderline personality disorder (e.g., Ross et al., 2014) and iatrogenic theory (e.g., Brand & Loewenstein, 2014; Coons, 1986a). Furthermore, DID remains a disorder often confused with schizophrenia spectrum disorders (e.g., Tutkun et al., 1996), being a part of differential diagnosis with epilepsy (e.g., Bowman & Coons, 2000) or malingering (e.g., Brand & Chason, 2015; Brand et al., 2019). Comparing the emergence of reported violence exposure related to DID with non-DID populations, identifying types of reported traumas, and considering the link between reported age of exposure to abuses may complete a differential diagnosis of DID.

1.2. Objectives

The purpose of this study was derived from the trauma theory (e.g., Blihar et al., 2020; Brand & Loewenstein, 2014; Dalenberg et al., 2012; Vissia et al., 2016); furthermore, this research completes the review conducted by Dalenberg et al. (2012) about links between trauma and dissociation. The review briefly mentioned the link between dissociative disorders in general and reported traumas. However, there is no data regarding the types of reported traumas specifically related to DID and a comparison of these cases to non-DID populations; and no reported age of exposure to abuses has been explored. The current review is the first to focus on the types of reported childhood trauma in individuals with DID and the reported age of exposure to violence compared to a non-DID population.

The present work reviews articles that have examined the relation between reported traumas and DID from 1990 to 2022. Indeed, the DDIS, designed by Ross et al. (1990), was the first valid diagnostic tool for DID. Articles published prior to 1990 appeared to support the trauma theory, but were case studies (e.g., Ament, 1987; Boor, 1982b; Bowman et al., 1985; Brown, 1983; Fagan & McMahon, 1984; Goodwin, 1988; Goodwin, 1987; Lindsley, 1989; Smith, 1989), literature reviews (e.g., Boor, 1982a; Coons, 1986a; Cozolino, 1989; Elliott, 1982; Ganaway, 1989; Kluft, 1987; Kluft et al., 1984; Putnam et al., 1986; Stern, 1984; Wilbur, 1984), or empirical articles using DSM-III criteria to diagnose multiple personality disorder (e.g., Coons, 1986b; Coons et al., 1988; Coons & Milstein, 1986; Schultz et al., 1989). Therefore, these studies did not meet the inclusion criteria described in section 2.4.

Three aims were pursued in this review: 1. to determine whether individuals with DID have experienced more reported childhood traumas than non-DID populations, 2. to identify types of reported traumas that may contribute to the development of DID, and 3. determine if studies have examined the relation between reported age of exposure to traumas and DID emergence.

2. Method

2.1. Protocol and registration

No protocols were registered for this review. Using the selected keywords, several databases were checked for systematic reviews and/or meta-analysis on the selected topic, including PubMed, ProQuest, PsycInfo, PsycArticles, the Cochrane Library, Scopus, ScienceDirect, and Google Scholar.

The methodology followed Gedda's (2015) PRISMA criteria.

2.2. Eligibility criteria

The aims of the study were to identify types of reported childhood traumas leading to the development of DID compared to another population and to estimate a reported age to the beginning of traumas related to DID. Searches were conducted in the following databases: PubMed, ProQuest, PsycInfo, Scopus and ScienceDirect. Articles published between 1990 and 2022 were selected because there were no diagnostic tools for DID prior to 1990 (DDIS; Ross et al., 1990). Articles extracted were exclusively in English because limited French literature about DID exists. Furthermore, it was not possible to understand or translate articles in other languages.

The types of studies included in this review were clinical trials, randomized control trials, observational studies, and dissertations. Dissertations are part of the grey literature and help to reduce publication bias (e.g., Paez, 2017).

2.3. Research and information sources

Searches were conducted in PubMed, ProQuest, PsycInfo, Scopus and ScienceDirect. ProQuest and PsycInfo were selected from the same database. In addition, a study by Chalavi et al. (2013) was retrieved from Google Scholar because its aim corresponded to this review's purpose.

The following keywords were entered into the cited databases with the filter "years 1990–2022": "dissociative identity disorder," "multiple personality disorder," "childhood trauma," "child abuse," "childhood maltreatment," and "childhood traumatization". Automated search strategies are shown in Table 1 below:

2.4. Study selection, inclusion and exclusion criteria

Data extraction was performed using Zotero. First, duplicates were excluded, then articles that did not meet eligibility criteria. Thus, case studies, pilot studies, literature reviews, books or book chapters, letters, comments or discussions, and articles not written in English were excluded. Second, articles and dissertations that did not have the purpose of examining traumas associated with the onset of

Table 1
Automated search strategies of five databases, date of search and number of results.

Databases	Last research	Search results	Results
PudMed	22.02.22	("childhood trauma"(Title/Abstract) OR "childhood maltreatment"(Title/Abstract) OR "child abuse"(Title/Abstract) OR "childhood traumatization"(Title/Abstract)) AND "dissociative identity disorder"(Title/Abstract)	76
ProQuest/ PsycInfo	04.03.22	(ab("dissociative identity disorder") OR ab("multiple personality disorder")) AND (ab("childhood trauma") OR ab ("child abuse") OR ab("childhood maltreatment") AND ab("childhood traumatization"))	167
Scopus	04.03.22	(TITLE-ABS-KEY ("*dissociative identity disorder*") OR TITLE-ABS-KEY ("multiple personality disorder") AND TITLE-ABS-KEY ("*childhood trauma*") OR TITLE-ABS-KEY ("*child abuse*") OR TITLE-ABS-KEY ("*childhood maltreatment*") OR TITLE-ABS-KEY ("*childhood traumatization*"))	268
ScienceDirect	04.03.22	TITLE-ABS-KEY: ("dissociative identity disorder" OR "multiple personality disorder") AND ("childhood trauma" OR "childhood maltreatment" OR "child abuse" OR "childhood traumatization")	21

DID or did not have results that assessed such traumas were also excluded.

Articles selected for the review met the following criteria:

- DID was diagnosed using validated tools such as the SCID-D (Mychailyszyn et al., 2021).
- Reported childhood traumas were also assessed using validated scales such as the Childhood Trauma Questionnaire (Bernstein et al., 2003; Georgieva et al., 2021).
- Different traumas, such as physical or sexual abuse, emotional abuse, or neglect, were identified.
- DID patients were compared to at least one other population.

2.5. Bias assessment risk

The eight articles included in the systematic review were assessed using the Quality Assessment Tool for Observational Cohort or Cross-Sectional Studies (Shuang et al., 2014). The scale consists of 14 items. Each item is rated as "yes," "no," "not applicable," or "not reported," providing an indication of the internal validity of studies. The results of the bias assessment are presented in Table 2.

3. Results

3.1. Characteristics of studies

All articles were cross-sectional studies. The total number of participants was N=1,124. Participants were aged between 11 and 65 years, and the majority of them were women. Three articles included mixed populations (Foote et al., 2006; Şar et al., 2014; Yargiç et al., 1998). Of these, one was conducted on adolescents.

Five studies (Chalavi et al., 2013; Chalavi et al., 2015; Reinders et al., 2018; Scroppo et al., 1998; Yargiç et al., 1998) assessed reported childhood traumas in a population specifically diagnosed with DID. Foote et al. (2006), Şar et al. (2007), and Şar et al. (2014) combined participants diagnosed with DID and other diagnosed with dissociative disorders. Foote et al. (2006) and Şar et al. (2014) included DID and dissociative disorder not otherwise specified (DDNOS), while Şar et al. (2007) included dissociative amnesia with and without dissociative fugue, DID, DDNOS, and depersonalization disorder.

Only Reinders et al. (2018) included assessment of sexual harassment. However, they did not include physical neglect. Şar et al. (2014) included denial of trauma, Foote et al. (2006) distinguished between physical and sexual abuse only, and Yargiç et al. (1998) did not distinguish between physical and emotional neglect. Şar et al. (2007) included measurements of subcategories of physical neglect, including early cessation of education, deficient nutrition, deficient medical care, deficient security, and economic restrictions. Chalavi et al. (2013) assessed the DID group through the neutral personality state (NPS) and the trauma-related personality state (TPS).

Within studies, DID participants were compared to PTSD participants and a group without pathology (Chalavi et al., 2013; Chalavi et al., 2015), to schizophrenia disorder, panic disorder, or partial complex epilepsy patients (Yargiç et al., 1998), or were only compared to a group without dissociative disorder (Scroppo et al., 1998) or without pathology (Reinders et al., 2018). Studies of dissociative disorders including DID compared these disorders to either a group without pathology (Foote et al., 2006; Şar et al., 2014) or a group without dissociative disorder (Şar et al., 2007).

3.2. Studies selection

Fig. 1, Tables 3–5.

3.3. Risk of study bias

Of the eight included studies, all reported no follow-up rate and all administered interviews and scales only once. All of the measurement tools used were standardized and described within articles; however, Chalavi et al. (2013) and Chalavi et al. (2015) did not administer scales between groups. The DID-PTSD group was assessed with the SCID-D; the PTSD group with the Clinical Administered PTSD Scale (CAPS); and the control group was with the DES, the SDQ-20, and the Trauma Experiences Checklist (TEC). Foote et al. (2006) adapted the TEC and moved away from standardization.

All articles defined their inclusion and exclusion criteria with the exception of Şar et al. (2014). Only Şar et al. (2007) justified their sample size. Finally, Scroppo et al. (1998) and Yargiç et al. (1998) did not use assessors blinded to the exposure status of participants. Chalavi et al. (2013) and Reinders et al. (2018) did not inform assessors of conditions during scale administration.

3.4. Studies results

According to the DID-specific articles (Chalavi et al., 2013; Chalavi et al., 2015; Reinders et al., 2018; Scroppo et al., 1998; Yargiç et al., 1998), DID individuals reported significantly more traumas than PTSD individuals and/or those without pathology (Chalavi et al., 2013; Chalavi et al., 2015; Reinders et al., 2018) or without dissociative disorder (Scroppo et al., 1998). Yargiç et al. (1998) did not measure total trauma.

Of studies on dissociative disorders, including DID (Foote et al., 2006; Şar et al., 2007; Şar et al., 2014), only Şar et al. (2007) and Şar et al. (2014) assessed total trauma. Şar et al. (2007) showed those with dissociative disorders report more trauma than those without dissociative disorders, while Şar et al. (2014) concluded there is a nonsignificant difference between these groups.

Of the DID-specific articles, Reinders et al. (2018) concluded DID patients report more emotional neglect, emotional abuse, physical abuse, sexual abuse, and sexual harassment than those without pathology. Chalavi et al. (2013), Chalavi et al. (2015), and Scroppo et al. (1998) argued emotional neglect, physical neglect, emotional abuse, physical abuse, and sexual abuse were experienced more by individuals with DID than individuals with PTSD and/or those

Table 2
Risk of study biais' assessment with the Quality Assessment Tool for Observational Cohort or Cross-Sectional Studies (k=8)

Authors	Purpose stated	Population specified	Eligible persons at least 50%	Egal participants selection (similar population, inclusion/exclusion criteria)	Sample size justification, PD[1], variance and effect estimates	Exposure.s of interest measured prior to outcome.s	Timeframe between exposure and results	Different level of exposures related to outcomes	Valid and reliable measures and /or implemented across all participants[2]	Repeated mesures	Blinded assessors	Followup rate	Statistical analyses
Reinders et al. (2018)	YES	YES	NR[3]	YES	NO	YES	NO	YES	YES	NA[4]	NR	NA	YES
Chalavi et al. (2015)	YES	YES	NR	YES	NO	YES	NO	YES	NO	NA	YES	NA	YES
Sar et al. (2014)	YES	YES	YES	NO	NO	YES	NO	YES	YES	NA	YES	NA	NO
Chalavi et al. (2013)	YES	YES	NR	YES	NO	YES	NO	YES	NO	NA	NR	NA	YES
Sar et al. (2007)	YES	YES	YES	YES	YES	YES	NO	YES	YES	NA	YES	NA	YES
Foote et al. (2006)	YES	YES	NO	YES	NO	YES	NO	YES	NO	NA	YES	NA	YES
Scroppo et al. (1998)	YES	YES	YES	YES	NO	YES	NO	YES	YES	NA	NO	NA	YES
Yargiç et al. (1998)	YES	YES	NR	YES	NO	YES	NO	YES	YES	NA	NO	NA	YES

[1] Power Description.
[2] Items 9 and 11.
[3] NR: No Reported.
[4] NA: No Applicable.

without dissociative disorder. However, in Yargiç et al. (1998), only sexual abuse was reported more by DID than schizophrenia disorder, panic disorder, and epilepsy patients. Physical abuse and emotional abuse were experienced more by DID patients compared to schizophrenia and panic disorder patients, but not compared to epilepsy patients. Neglect was reported more by DID only in comparison to panic disorder patients.

Among dissociative disorders studies, Foote et al. (2006) concluded individuals with dissociative disorders, including five participants diagnosed with DID, reported more physical and sexual abuse than individuals without pathology. Şar et al. (2014) assessed adolescents with dissociative disorders (DID and DDNOS), of whom 12 with DID did not report more emotional neglect, physical neglect, emotional abuse, denial of trauma, physical abuse, and sexual abuse than those without dissociative disorder. Şar et al. (2007) concluded emotional neglect, physical neglect, emotional abuse, physical abuse and sexual abuse were experienced more by people with dissociative disorders, including seven with DID, than by the group without dissociative disorder. Şar et al. (2007) also concluded early cessation of education, deficient nutrition, and deficient security were more frequently reported by those with dissociative disorders. No differences between the dissociative disorders group and the control group appear to have been observed for deficient medical care or economic restrictions.

Only Reinders et al. (2018) and Scroppo et al. (1998) provided estimates of the reported age or age range of trauma occurrence. Reinders et al. (2018) concluded emotional neglect, emotional abuse, physical abuse, sexual abuse and sexual harassment would have occurred more at the reported age range of 0−6 years compared to 7−12 years and 13−18 years, or compared to individuals without pathology. Scroppo et al. (1998) stressed that among women with DID, physical abuse would have started around 2.80 years, and sexual abuse would have started around an average of 3.28 years. The reported age of exposure to this violence would have been earlier than that recorded among women without DID (Scroppo et al., 1998).

4. Discussion

The purposes of the review were to: 1. to determine whether individuals with DID have experienced more reported childhood traumas than non-DID populations; 2. identify types of reported traumas that may contribute to the development of DID; and 3. determine if studies have examined the relation between reported age of exposure to traumas and DID emergence. The methodology used followed Gedda's (2015) PRISMA criteria. Only eight articles met the inclusion criteria.

Firstly, total trauma mostly seems to be more highly reported by individuals with DID compared to individuals with PTSD (Chalavi et al., 2013; Chalavi et al., 2015), schizophrenia disorder, panic disorder, epilepsy (Yargiç et al., 1998), and individuals without pathology (Chalavi et al., 2013; Chalavi et al., 2015; Reinders et al., 2018; Scroppo et al., 1998). Even in articles that do not distinguish between DID and dissociative disorders in the results section, the authors concluded patient with dissociative disorders report more total trauma in comparison to individuals without pathology (Foote et al., 2006; Şar et al., 2007).

Secondly, all the studies considered sexual and physical abuse and mostly seemed to conclude that different types of violence are strongly related to DID (Chalavi et al., 2013; Chalavi et al., 2015; Reinders et al., 2018; Scroppo et al., 1998; Yargiç et al., 1998) or dissociative disorders (Foote et al., 2006; Şar et al., 2007). Some authors assessed emotional abuse, emotional neglect, and physical neglect and mostly reported a strong association with DID (Chalavi et al., 2013; Chalavi et al., 2015; Reinders et al., 2018; Yargiç et al., 1998) or dissociative disorder (Şar et al., 2007). Only one study assessed sexual harassment (Reinders et al., 2018) and only one other study assessed

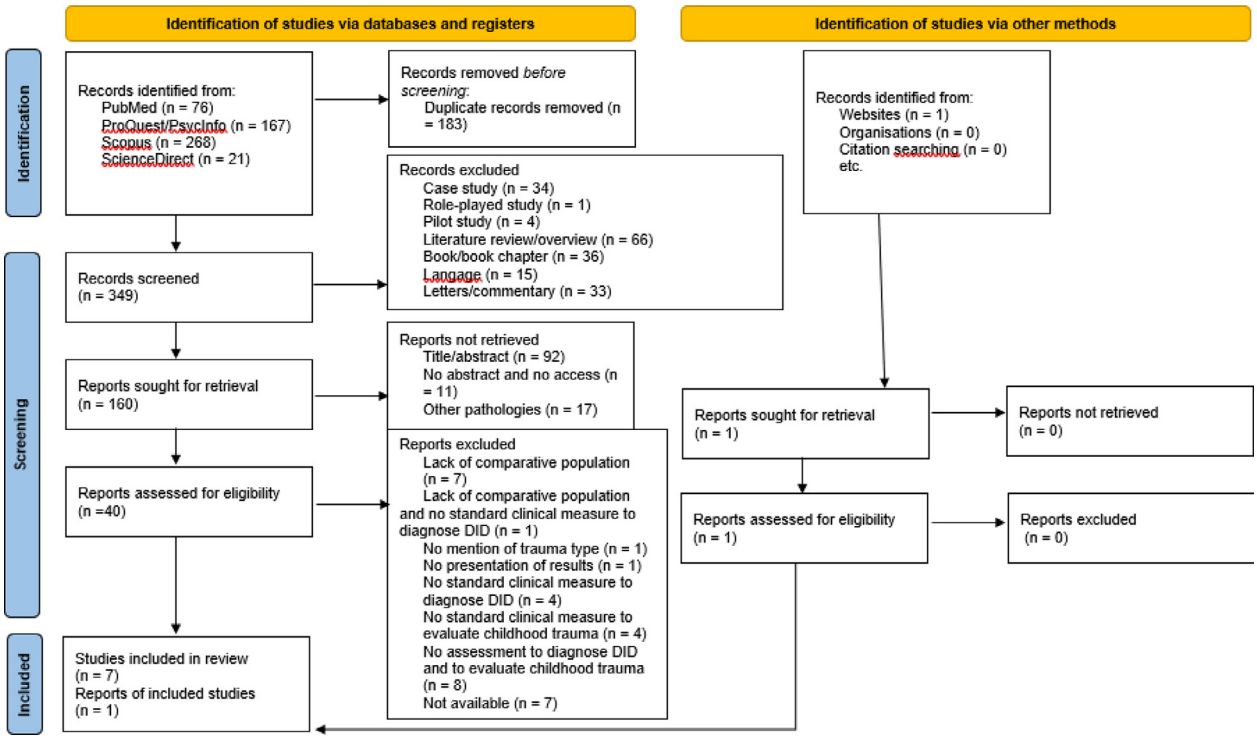

Fig. 1. PRISMA 2020 flow diagram detailing studies selection, included searches databases, registers and other sources.

Note. Adapted from "The PRISMA 2020 statement: an updated guideline for reporting systematic reviews," by M. J., Page, J. E., McKenzie, P. M., Bossuyt, I., Boutron, T. C., Hoffmann, C. D., Mulrow et al., 2021, Systematic Reviews, 10(1), p.8 (https://doi.org/10.1186/s13643-021-01626-4). CC-BY-NC.

the denial of trauma (Şar et al., 2014). The former concluded there was a strong association with DID while the latter reported no association with dissociative disorders. Finally, one article detailed the various types of physical abuse, such as an early cessation of education, deficient medical care, deficient nutrition, deficient security, and economic restrictions (Şar et al., 2007). The authors stressed there was a strong association between dissociative disorders and early cessation of education, deficient nutrition, and deficient security.

Sexual and physical assaults seem to remain the most studied forms of maltreatment and the results of this investigation seem to be consistent with the literature (e.g., Ament, 1987; Anderson et al., 1993; Boor, 1982a; Boor, 1982b; Bowman et al., 1985; Brown, 1983; Coons, 1986a; Coons, 1986b; Coons et al., 1988; Coons & Milstein, 1986; Cozolino, 1989; Ellason et al., 1996; Elliott, 1982; Fagan & McMahon, 1984; Ganaway, 1989; Goodwin, 1988; Goodwin, 1987; Kluft, 1987; Kluft et al., 1984; Lindsley, 1989; Putnam et al., 1986; Ross et al., 1991; Schultz et al., 1989; Smith, 1989; Stern, 1984; Wilbur, 1984). Emotional abuse and neglect are not greatlhy studied but the findings of this paper seem to support the current literature (e.g., Boor, 1982a; Cozolino, 1989; Stuppy, 1996; Wilbur, 1984). Finally, it is difficult to discuss the results about sexual harassment, denial of trauma and the different types of physical abuse because no study seems to have assessed them. In consequence, replications are needed.

Thirdly, two studies mentioned the reported age of the onset of traumas. Reinders et al. (2018) assessed different reported age ranges and stressed that persons with DID experienced significantly more trauma in the reported age range of zero to six years. Scroppo et al. (1998) estimated an onset of physical abuse around 2.80 years and an onset of sexual abuse around 3.28 years. In the literature, Anderson et al. (1993) reported an average age of 4.6 years for exposure to physical abuse and 4.9 years for exposure to sexual abuse. Ross et al. (1991) concluded that out of 102 individuals with DID, 50% reported the onset of physical and sexual abuse before the age of 5. The findings of these authors seem to corroborate the estimate of the reported 0–6 age range. The determination by Scroppo et al. (1998) reinforces this finding. Nevertheless, more studies are needed.

An abusive environment in which people with DID grew up would prevent the integration of memories and the consolidation of a sense of self perhaps as a result of dysfunctional metacognition (e.g., Brand & Loewenstein, 2014; Forrest, 2001; Şar et al., 2017). Some authors identify the critical period for metacognition development as three to four years (e.g., Samuels et al., 2006), and others between three and five years (e.g., Whitebread et al., 2009) or five to six (e.g., Chernokova, 2014). Thus, results obtained by Reinders et al. (2018) may be consistent with the metacognition deficit hypothesis. However, the disparity in proposed for reported age averages does not allow for a conclusion.

In conclusion, all these results seem to support the trauma theory of dissociation. This theory posits dissociation is the result of traumatic events, while the iatrogenic theory hypothesizes dissociation is due to suggestibility of therapies, malingering or false memories (e.g., Blihar et al., 2020; Brand & Loewenstein, 2014; Dalenberg et al., 2012; Vissia et al., 2016).

The systematic review has several limitations. The first limitation is the small number of included articles. One of the main reasons for excluding papers was lack of assessment (k=12). In addition, seven articles were not accessible, limiting the possibility of including other studies. This field of research needs to be further explored. The second limitation is that only two risk factors were considered: reported type of traumas and reported age. Other variables, such as the social and cultural factors mentioned by Şar et al.'s (2017) review, family environment, or attachment style, could influence the onset of DID onset (e.g., Korol, 2008; Riggs et al., 2007). The third limitation is that Foote et al. (2006), Şar et al. (2007), and Şar et al. (2014) do not distinguish DID from other dissociative disorders in their results. It would be relevant to differentiate these in future studies to establish possible similarities and/or differences and to better distinguish them.

Table 3
Included studies reporting population, assessment tools and limits (k=8)[1].

Authors	Population	Assessment tools	Limits
Reinders et al. (2018)	N=75, 32 DID of whom 29 comorbid with current PTSD, 3 with remission PTSD, 13 have no other comorbidities and 43 with no pathology. Exclusively women aged 18 to 65 years (M_{EG} = 43.56, SD_{EG} = 9.34; M_{CG} = 42.28, SD_{CG} = 11.57).	SCID-D DES, SDQ-20, Gambridge Depersonnalization Scale. TEC	Recruitment of women only: limitation of the study's generalization
Chalavi et al. (2015)	N=61, 17 DID of which 82.35% comorbid with current PTSD and 17.65% with remission PTSD, 16 PTSD and 28 without pathology. Exclusively women aged 18 to 65 years ($M_{DID\text{-}PTSD\ and\ PTSD}$ = 42.33, $SD_{DID\text{-}PTSD\ and\ PTSD}$ = 10.91; M_{CG} = 41.75, SD_{CG} = 12.29)	CAPS DES, SDQ-20, SDQ-5 TEC, CTQ	Modest sample size (N=61) Recruitment of women only: limitation of the study's generalization
Sar et al. (2014)	N=166, 33 dissociative disorders including 12 DID and 21 DDNOS, and 83 without pathology. Psychiatric outpatients aged 11 to 17 years (M = 13.6, SD = 2.0) including 45 boys (18 DDNOS, 5 DID) and 28 girls (15 DDNOS, 7 DID) followed up from May 1st to June 30, 2012.	SCID-D Adolescent Dissociation Experience Scale Child Symptom Inventory-4 McMaster Family Assessment Device CTQ.	First study with dissociative disorders adolescents: replications needed. SCID-D designed for adult population: possible limitation for adolescent population increasing the risk of "false-positive" diagnosis. More than half dissociative disorders adolescents also met: symptoms of separation anxiety, attention deficit/hyperactivity disorder and major depressive disorder. Comorbidities assessed by parents. 63.5% evaluated by SCID-D were enrolled.
Chalavi et al. (2013)	N=60, 17 DID of which 82.35% comorbid with current PTSD and 17.65% with remission PTSD, 16 PTSD and 28 without pathology. Exclusively women aged 18 to 65 years ($M_{DID\text{-}PTSD}$ = 43.82, $SD_{DID\text{-}PTSD}$ = 9.85; M_{PTSD} = 40.75, SD_{PTSD} = 12.05; M_{CG} = 41.75, SD_{CG} = 12.29)	SCID-D, CAPS. DES, SDQ-20 TEC, CTQ	Modest sample size (N=60). Only interpersonal trauma was included. Exclusively women: limitation of the study's generalization. Differences in severity of reported childhood traumas among PTSD group: may explain some of the effects observed. "Manual tracing" preferred for technical analysis, subject to measurement errors.
Şar et al. (2007)	N=628, 513 without dissociative disorders and 115 dissociative disorders including 52 DDNOS, 46 dissociative amnesia, 9 depersonalization disorder, 7 DID and 1 dissociative amnesia with dissociative fugue. Only women aged 18 to 65 years (M = 34.8, SD = 11.5) followed up from June 1st to September 30, 1997.	DDIS Structure Clinical Interview for DSM-III-R Personnality Disorder Structured Clinical Interview for DSM-III-R	Distinction between DID and DDNOS but appear to have similar symptoms. Structured interview considered of possible source of "false-positive" diagnosis. DDIS: no section for differential diagnosis.
Foote et al. (2006)	N=82, 24 dissociative disorders including 8 dissociative amnesia, 7 DDNOS, 5 DID and 4 depersonalization, and 58 without pathology. Psychiatric outpatients aged 18 to 65 years (M = 37.4, SD = 11.4) followep up from August 1996 to March 1998.	SCID-D DES TEC	Insufficient funding to conduct Spanish interviews: prevents processing of 16% of data. 35% of admitted participants were interviewed: possible source of error between demographic measures of trauma and dissociation between interviewed and non-interviewed participants. Exclusively outpatients: possible reduction in the number of subjects. Adaptation of the TEC: focus on physical and sexual abuse.
Scroppo et al. (1998)	N=42, 21 DID and 21 without dissociative disorder. Only women in psychiatric outpatients, including 2 in psychiatric inpatient over 18 years old (M_{EG} = 39.38; M_{CG} = 35.95).	DDIS. DES Tellegen Absorption Scale Brief Symptom Inventory, The Rorschach Test Dissociative-content Rorschach scoring system CTQ.	Not blinded assessors: possible increase in experimenter bias. Exclusively women: limitation of the study's generalization. Modest sample size (N=42).
Yargiç et al. (1998)	N=60, 19 DID including 1 DDNOS, 20 schizophrenia disorder including 1 comorbid with DID, 20 panic disorder and 20 partial complex epilepsy. Participants over 18 years old followed up from May to June 1994.	DDIS DES	Not blinded assessors. Modest sample size (N=60).

[1] Experimental group (EG); Control Group (CG); DID comorbid with PTSD (DID-PTSD); only PTSD (PTSD).

However, the review also has strengths. It is the first review to focus on the types of reported childhood trauma in individuals with DID and the reported age of exposure to violence compared to another population. DID still remains poorly recognized in the clinic environment (e.g., Boon & Van der Hart, 2016; Gentile et al., 2013), and remains difficult to diagnose through the potential multiple comorbidities (e.g., Rodewald et al., 2014), as well as iatrogenic theory (e.g., Brand & Loewenstein, 2014; Coons, 1986a).

For future research, it would be interesting to expand the analysis to childhood adversity in general, using other tools than the CTQ or TEC. For instance, the Maltreatment and Abuse Chronology of Exposure Scale (e.g., Teicher & Parigger, 2015) assesses, among other things, nonverbal emotional abuse, family violence, and peer violence. With this tool, it would be possible to specify the trauma environment—intra-familial or extra-familial—and its impact. For example, sexual abuse within the family would have more impact on posttraumatic symptoms than extra-familial abuse (e.g., Cantón-Cortés & Cantón, 2010; Murat et al., 2015). Finally, comparing DID to other dissociative disorders would identify some differences and allow for a better distinction between these disorders.

Table 4
Included studies reporting types of traumas related to DID or dissociative disorders compared to non-DID populations (k=8)[1].

Type of traumas	DID	Dissociative disorders	PTSD	Control	Schizophrenia disorders (SD)	Panic disorder (PD)	Epilepsy (E)	p value	Authors
Total trauma	M=18.45 SD=3.97	NA	NA	M=3.14 SD=2.78	NA	NA	NA	p< .001	Reinders et al. (2018)
	M=97.13 SD=16.63	NA	M=60.94 SD=22.7	M=36.0 SD=8.0	NA	NA	NA	p< .001	Chalavi et al. (2015)
	NA	M=32.7 SD=9.0	NA	M=30.8 SD=9.5	NA	NA	NA	p= .382	Sar et al. (2014)
	M_{tps}=97.13 SD_{tps}=16.65 M_{nps}=88.25 SD_{nps}=18.62	NA	M=60.94 SD=22.70	NR	NA	NA	NA	p_{tps}< .001 p_{nps} < .001	Chalavi et al. (2013)
	NA	χ^2 = 31.56	NA	Cf. χ^2 of dissociative disorders	NA	NA	NA	p = .001	Sar et al. (2007)
	M=17.15 SD=3.26	NA	NA	M=9.09 SD=2.96	NA	NA	NA	p< .001	Scroppo et al. (1998)
Emotional neglect	M=12.28 SD=2.58	NA	NA	M=2.60 SD=4.39	NA	NA	NA	p<.001	Reinders et al. (2018)
	M=23.40 SD=2.26	NA	M=16.63 SD=6.02	M=10.36 SD=4.14	NA	NA	NA	p<.001	Chalavi et al. (2015)
	NA	M=8.5 SD=4.3	NA	M=7.4 SD=3.5	NA	NA	NA	p= .208	Sar et al. (2014)
	M_{tps}=23.40 SD_{tps}=2.26 M_{nps}=21.81 SD_{nps}=2.90	NA	M=16.63 SD=6.02	NR	NA	NA	NA	p_{tps}< .001 P_{nps} = .004	Chalavi et al. (2013)
	NA	χ^2 = 12.86	NA	Cf. χ^2 of dissociative disorders	NA	NA	NA	p= .001	Sar et al. (2007)
	M=3.78 SD= .55	NA	NA	M=2.27 SD= .67	NA	NA	NA	p<.001	Scroppo et al. (1998)
Physical neglect	M=17.47 SD=3.87	NA	M=10.30 SD=3.93	M=7.42 SD=2.28	NA	NA	NA	p< .001	Chalavi et al. (2015)
	NA	M=6.2 SD=2.2	NA	M=6.4 SD=2.1	NA	NA	NA	p= .669	Sar et al. (2014)
	M_{tps}=17.47 SD_{tps}=3.87 M_{nps}=16.56 SD_{nps}=4.27	NA	M=10.50 SD=3.93	NR	NA	NA	NA	p_{tps}<.001 p_{nps}<.001	Chalavi et al. (2013)
	NA	χ^2 = 14.36	NA	Cf. dissociative disorders	NA	NA	NA	p= .024	Sar et al. (2007)
Early cessation of education	NA	NR	NA	NR	NA	NA	NA	p= .001	
Deficient nutrition	NA	NR	NA	NR	NA	NA	NA	p= .001	
Deficient security	NA	NR	NA	NR	NA	NA	NA	p= .001	
Deficient medical care	NA	NR	NA	NR	NA	NA	NA	p= n.s	
Economic restrictions	NA	NR	NA	NR	NA	NA	NA	p= n.s	
	M=2.23 SD= .76	NA	NA	M=1.28 SD= .34	NA	NA	NA	p< .001	Scroppo et al. (1998)
Neglect	Cf. χ^2 of SD, PD and E	NA	NA	NA	χ^2=2.51	χ^2=8.29	χ^2=2.51	p_{SD}= n.s p_{PD} < .01 p_E = n.s	Yargic et al. (1998)
Physical abuse	M=11.69 SD=3.63	NA	NA	M= .60 SD=1.99	NA	NA	NA	p< .001	Reinders et al. (2018)
	M=15.60 SD=3.37	NA	M=9.31 SD=4.84	M=3.43 SD=1.34	NA	NA	NA	p< .001	Chalavi et al. (2015)
	NA	M=5.4 SD=1.1	NA	M=5.6 SD=1.7	NA	NA	NA	p = .721	Sar et al. (2014)
	M_{tps}=15.60 SD_{tps}=5.37 M_{nps}=14.00 SD_{nps}=6.02	NA	M=9.31 SD=4.84	NR	NA	NA	NA	p_{tps}= .002 p_{nps}= .021	Chalavi et al. (2013)
	NA	χ^2 = 9.97	NA	Cf. χ^2 of dissociative disorders	NA	NA	NA	p= .001	Sar et al. (2007)
	NA	β = 1.76 SE = .53 Odds Ratio = 5.86 IC 95% = 2.06 − 16.6	NA	Cf. results of dissociative disorders	NA	NA	NA	p<.001	Foote et al. (2006)
	M=4.16 SD= .65	NA	NA	M=1.67 SD=1.07	NA	NA	NA	p<.001	Scroppo et al. (1998)
	Cf. χ^2 of SD, PD and E	NA	NA	NA	χ^2=6.67	χ^2=10.99	χ^2=3.64	p_{SD}<.001 p_{PD}<.0001 p_E = n.s	Yargic et al. (1998)
Emotional abuse	M=11.85 SD=3.26	NA	NA	M=1.53 SD=3.23	NA	NA	NA	p<.001	Reinders et al. (2018)
	M=22.80 SD=3.30	NA	M=14.44 SD=6.31	M=7.50 SD=2.56	NA	NA	NA	p<.001	Chalavi et al. (2015)
	M=7.4 SD=3.2	NA	NA	M=6.1 SD=2.4	NA	NA	NA	p= .50	Sar et al. (2014)
	Mtps=22.80 SDtps=3.30 Mnps=19.68 SDnps=4.61	NA	M=14.44 SD=6.31	NR	NA	NA	NA	p_{tps}= .12 p_{nps}<.001	Chalavi et al. (2013)
	NA	χ^2 = 18.80	NA	Cf. χ^2 of dissociative disorders	NA	NA	NA	p= .27	Sar et al. (2007)
	M=4.16 SD= .65	NA	NA	M=2.46 SD=1.00	NA	NA	NA	p<.001	Scroppo et al. (1998)
	Cf. χ^2 of SD, PD and E	NA	NA	NA	χ^2=9.53	χ^2=9.53	χ^2=3.64	p_{SD}<.001 p_{PD}<.001 p_E= n.s	Yargic et al. (1998)
Sexual harassment	M=10.07 SD=4.29	NA	NA	M= .57 SD=1.57	NA	NA	NA	p<.001	Reinders et al. (2018)
Denial of trauma	NA	M=1.7 SD=1.1	NA	M=1.8 SD=1.2	NA	NA	NA	p = .558	Sar et al. (2014)
Sexual abuse	M=10.38 SD=4.41	NA	NA	M= .07 SD= .34	NA	NA	NA	p<.001	Reinders et al. (2018)
	M=17.87 SD=7.32	NA	M=10.06 SD= 6.06	M=5.29 SD= .73	NA	NA	NA	p<.001	Chalavi et al. (2015)
	NA	M=5.1 SD= .70	NA	M=5.4 SD=2.4	NA	NA	NA	p= .555	Sar et al. (2014)
	M_{tps}=17.87 SD_{tps}=7.32 M_{nps}=16.19 SD_{nps}=7.26	NA	M=10.06 SD=6.06	NR	NA	NA	NA	p_{tps}=.003 p_{nps}=.001	Chalavi et al. (2013)

(*continued on next page*)

Table 4 (*Continued*)

Type of traumas	DID	Dissociative disorders	PTSD	Control	Schizophrenia disorders (SD)	Panic disorder (PD)	Epilepsy (E)	p value	Authors
	NA	χ^2 = NR	NA	Cf. results of dissociative disorders	NA	NA	NA	p= .005	Sar et al. (2007)
	NA	β = 2.06 SE = .56 Odds Ratio = 7.87 IC 95% = 2.65 − 23.39	NA	Cf. results of dissociative disorders	NA	NA	NA	p<.001	Foote et al. (2006)
	M=3.84 SD=1.16	NA	NA	M=1.41 SD= .71	NA	NA	NA	p<.001	Scroppo et al. (1998)
	Cf. χ^2 of SD, PD and E	NA	NA	NA	χ^2=10.41	χ^2=21.54	χ^2=12.38	p_{SD}<.01 p_{PD}<.0001 p_E<.001	Yargic et al. (1998)

[1] Not Applicable (NA); Not Reported (NR); Trauma-related personality state (tps); Neutral Personality State (nps).

Table 5
Studies reporting age of exposure to traumas related to DID compared to control group (k=2)[1].

Types of trauma	Age ranges 0-6 for DID	Age ranges 7-12 for DID	Age ranges 13-18 for DID	Age ranges 0-6 for control	Age ranges 7-12 for control	Age ranges 13-18 for control	Age Mean and standard deviation for DID	Age Mean and standard deviation for control	p value	Authors
Physical abuse	M=4.75SD=1.00	M=3.83SD= .86	M=3.57SD=1.26	M= .30SD=1.12	M= .42SD=1.18	M= .16SD= .75	NA	NA	p < .001	Reinders et al. (2018)
	NA	NA	NA	NA	NA	NA	M=2.80SD=2.15	M=4.33SD=1.63	p = n.s (ANOVA and ANCOVA)	Scroppo et al. (1998)
Sexual abuse	M=4.36SD=1.57	M=3.21SD=1.55	M=3.18SD=1.54	M= .00SD= .00	M= .00SD= .00	M= .12SD= .45	NA	NA	p< .001	Reinders et al. (2018)
	NA	NA	NA	NA	NA	NA	M=3.28SD=2.46	M=8.83SD=5.35	p < .001 (ANOVA)p < .05 (ANCOVA)	Scroppo et al. (1998)
Emotional abuse	M=4.75SD= .97	M=3.79SD= .79	M=3.75SD=1.05	M= .35SD=1.29	M=3.83SD= .86	M=3.57SD=1.26	NA	NA	p< .001	Reinders et al. (2018)
Emotional neglect	M=5.0SD= .00	M=4.0SD= .00	M=3.71SD=1.05	M=1.05SD=1.94	M=1.02SD=1.61	M= .77SD=1.48	NA	NA	p< .001	
Sexual harassment	M=3.57SD=1.97	M=2.79SD=1.57	M=2.89SD=1.47	M= .05SD= .31	M= .19SD= .76	M= .37SD= .90	NA	NA	p< .001	

[1] No Applicable (NA).

5. Conclusion

DID remains a disorder that is still under-recognized and contested. Nevertheless, it would seem the trauma theory has more evidence to support it than the iatrogenic theory. Moreover, distinguishing DID from PTSD and personality disorder, for instance, would further demonstrate its validity. The present review is consistent with the trauma theory, and seems to reinforce the distinction of DID from other populations. Further studies are needed to improve recognition of the disorder.

Declaration of Competing Interest

The authors have no competing interests to declare.

References

Ament, A. (1987). Rape and multiple personality disorder. *American Journal of Psychiatry*, *144*(4). doi:10.1176/ajp.144.4.541-a 541-a.

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

Anderson, C. L., & Alexander, P. C. (1996). The relationship between attachment and dissociation in adult survivors of incest. *Psychiatry*, *59*(3), 240–254. doi:10.1080/00332747.1996.11024765.

Anderson, G., Yasenik, L., & Ross, C. A. (1993). Dissociative experiences and disorders among women who identify themselves as sexual abuse survivors. *Child Abuse & Neglect*, *17*(5), 677–686. doi:10.1016/0145-2134(93)90088.

& Bernstein, D. P., Stein, J. A., Newcomb, M. D., Walker, E., Pogge, D., Ahluvalia, T., & Zule, W. (2003). Development and validation of a brief screening version of the Childhood Trauma Questionnaire. *Child Abuse & Neglect*, *27*(2), 169–190. doi:10.1016/S0145-2134(02)00541-0.

Binet, E., Carluer, L., Dellucci, H., Deprez, A., Gysi, J., Mazaira, S., Mosquera, D., … Zimmerman, E. (2022). *Evaluer et prendre en charge le trouble dissociatif de l'identité*. Dunod.

Blihar, D., Delgado, E., Buryak, M., Gonzalez, M., & Waechter, R. (2020). A systematic review of the neuroanatomy of dissociative identity disorder. *European Journal of Trauma & Dissociation*, *4*(3), 1–14. doi:10.1016/j.ejtd.2020.100148.

Boon, S., & Van der Hart, O. (2016). Evaluation et diagnostic des troubles dissociatifs du DSM-5. Dans J. Smith. *Psychothérapie de la dissociation et du trauma* (pp. 35–51). Dunot. doi:10.3917/dunod.smith.2016.01.0035.

Boor, M. (1982a). The multiple personality epidemic additional cases and inferences regarding diagnosis, etiology, dynamics, and treatment. *The Journal of Nervous and Mental Disease*, *170*(5), 302–304. doi:10.1097/00005053-198205000-00008.

Boor, M. (1982b). Childhood experiences of a client with multiple personality. *Psychological Reports*, *51*(1), 317–318. doi:10.2466/pr0.1982.51.1.317.

Bowman, E. S., Blix, S., & Coons, P. M. (1985). Multiple personality in adolescence: Relationship to incestual experiences. *Journal of the American Academy of Child Psychiatry*, *24*(1), 109–114. doi:10.1016/S0002-7138(09)60418-0.

Bowman, E. S., & Coons, P. M. (2000). The differential diagnosis of epilepsy, pseudoseizures, dissociative identity disorder, and dissociative disorder not otherwise specified. *Bulletin of the Menninger Clinic*, *64*(2), 164–180.

Bozkurt, H., Duzman Mutluer, T., Kose, C., & Zoroglu, S. (2015). High psychiatric comorbidity in adolescents with dissociative disorders. *Psychiatry and Clinical Neurosciences*, *69*(6), 369–374. doi:10.1111/pcn.12256.

Brand, B. L., & Chasson, G. S. (2015). Distinguishing simulated from genuine dissociative identity disorder on the MMPI-2. *Psychological Trauma: Theory, Research, Practice, and Policy*, *7*(1), 93–102. doi:10.1037/a0035181.

Brand, B., & Loewenstein, R. J. (2014). Does phasic trauma treatment make patients with dissociative identity disorder treatment more dissociative? *Journal of Trauma & Dissociation*, *15*(1), 52–65. doi:10.1080/15299732.2013.828150.

Brand, B. L., Loewenstein, R. J., & Lanius, R. A. (2014). Dissociative identity disorder. In G. O. Gabbard (Ed.), *Treatment of psychiatric disorder* (pp. 495–516). American Psychiatric Association Publishing. doi:10.1176/appi.books.9781585625048.gg24.

Brand, B. L., Webermann, A. R., Snyder, B. L., & Kaliush, P. R. (2019). Detecting clinical and simulated dissociative identity disorder with the Test of Memory Malingering. *Psychological Trauma: Theory, Research, Practice, and Policy*, *11*(5), 513–520. doi:10.1037/tra0000405.

Brown, G. W. (1983). Multiple personality disorder as perpetrator of child abuse. *Child Abuse & Neglect*, *7*(1), 123–126. doi:10.1016/0145-2134(83)90040-6.

Cantón-Cortés, D., & Cantón, J. (2010). Coping with child sexual abuse among college students and post-traumatic stress disorder: The role of continuity of abuse and relationship with the perpetrator. *Child Abuse & Neglect*, *34*(7), 496–506. doi:10.1016/j.chiabu.2009.11.004.

Carlson, E. B., & Putnam, W. (1987). Development, reliability, and validity of a dissociation scale. *The Journal of Nervous and Mental Disease*, *174*(12), 727–735. doi:10.1097/00005053-198612000-00004.

& Chalavi, S., Giessen, M. E., Vissia, E. M., Draijer, N., Nijenhuis, E. R., Cole, J. H., & Reinders, A. S (2013). Hippocampal morphology and childhood traumatization in dissociative identity disorder and posttraumatic stress disorder. In S. Chalavi (Ed.), *The traumatized brain: Gray and white matter morphology in dissociative identity disorder and Posttraumatic Stress Disorder* &. (pp. 119–150). University of Groningen.

Chalavi, S., Vissia, E. M., Giesen, M. E., Nijenhuis, E. R., Draijer, N., Cole, J. H., & Reinders, A. A. (2015). Abnormal hippocampal morphology in dissociative identity disorder and post-traumatic stress disorder correlates with childhood trauma and dissociative symptoms. *Human Brain Mapping*, *36*(5), 1692–1704. doi:10.1002/hbm.22730.

Chernokova, T. E. (2014). Features of the Metacognition Structure for Pre-school Age Children. *Procedia-Social and Behavioral Sciences*, *146*, 203–208. doi:10.1016/j.sbspro.2014.08.115.

Coons, P. M. (1986a). Child abuse and multiple personality disorder: Review of the literature and suggestions for treatment. *Child Abuse & Neglect*, *10*(4), 455–462. doi:10.1016/0145-2134(86)90049-9.

Coons, P. M. (1986b). Treatment progress in 20 patients with multiple personality disorder. *Journal of Nervous and Mental Disease*, *174*(12), 715–721. doi:10.1097/00005053-198612000-00002.

Coons, P. M., Bowman, E. S., & Milstein, V. (1988). Multiple personality disorder: A clinical investigation of 50 cases. *Journal of Nervous and Mental Disease*, *176*(9), 519–527. doi:10.1097/00005053-198809000-00001.

Coons, P. M., & Milstein, V. (1986). Psychosexual disturbances in multiple personality: Characteristics, etiology, and treatment. *The Journal of Clinical Psychiatry*, *47*(3), 106–110.

Cozolino, L. J. (1989). The ritual abuse of children: Implications for clinical practice and research. *The Journal of Sex Research*, *26*(1), 131–138. doi:10.1080/00224498909551497.

Dalenberg, C. J., Brand, B. L., Gleaves, D. H., Dorahy, M. J., Loewenstein, R. J., Cardena, E., & Spiegel, D. (2012). Evaluation of the evidence for the trauma and fantasy models of dissociation. *Psychological Bulletin*, *138*(3), 550–588. doi:10.1037/a0027447.

Dell, P. F. (2006). The Multidimensional Inventory of Dissociation (MID): A comprehensive measure of pathological dissociation. *Journal of Trauma & Dissociation*, *7*(2), 77–106. doi:10.1300/J229v07n02_06.

Dimitrova, L., Fernando, V., Vissia, E. M., Nijenhuis, E. R., Draijer, N., & Reinders, A. A. (2020). Sleep, trauma, fantasy and cognition in dissociative identity disorder, post-traumatic stress disorder and healthy controls: A replication and extension study. *European Journal of Psychotraumatology*, *11*(1), 1–11. doi:10.1080/20008198.2019.1705599.

Dorahy, M. J., Brand, B. L., Şar, V., Krüger, C., Stavropoulos, P., Martínez-Taboas, A., & Middleton, W. (2014). Dissociative identity disorder: An empirical overview. *Australian & New Zealand Journal of Psychiatry*, *48*(5), 402–417. doi:10.1177/0004867414527523.

Ellason, J. W., Ross, C. A., & Fuchs, D. L. (1996). Lifetime axis I and II comorbidity and childhood trauma history in dissociative identity disorder. *Psychiatry*, *59*(3), 255–266. doi:10.1080/00332747.1996.11024766.

Elliott, D. (1982). State intervention and childhood multiple personality disorder. *The Journal of Psychiatry & Law*, *10*(4), 441–456. doi:10.1177/009318538201000404.

Fagan, J., & McMahon, P. P. (1984). Incipient multiple personality in children: Four cases. *Journal of Nervous and Mental Disease*, *172*(1), 26–36. doi:10.1097/00005053-198401000-00007.

Shuang, F., Hou, S. X., Zhu, J. L., Ren, D. F., Cao, Z., & Tang, J. G. (2014). Percutaneous resolution of lumbar facet joint cysts as an alternative treatment to surgery: A meta-analysis. *PLoS One*, *9*(11), 1–9. doi:10.1371/journal.pone.0111695.T001.

Foote, B., Smolin, Y., Kaplan, M., Legatt, M. E., & Lipschitz, D. (2006). Prevalence of dissociative disorders in psychiatric outpatients. *American Journal of Psychiatry*, *163*(4), 623–629. doi:10.1176/appi.ajp.163.4.623.

Forrest, K. A. (2001). Toward an etiology of dissociative identity disorder: A neurodevelopmental approach. *Consciousness and Cognition*, *10*(3), 259–293. doi:10.1006/ccog.2001.0493.

Ganaway, G. K. (1989). Historical versus narrative truth: Clarifying the role of exogenous trauma in the etiology of MPD and its variants. *Dissociation: Progress in the Dissociative Disorders*, *2*(4), 205–220.

Gedda, M. (2015). Traduction française des lignes directrices PRISMA pour l'écriture et la lecture des revues systématiques et des méta-analyses. *Kinésithérapie, la Revue*, *15*(157), 39–44. doi:10.1016/j.kine.2014.11.004.

Gentile, J. P., Dillon, K. S., & Gillig, P. M. (2013). Psychotherapy and pharmacotherapy for patients with dissociative identity disorder. *Innovations in Clinical Neuroscience*, *10*(2), 22–29.

Gingrich, H. D. (2009). Assessing dissociative symptoms and dissociative disorders in college students in the Philippines. *Journal of Aggression, Maltreatment & Trauma*, *18*(4), 403–418. doi:10.1080/10926770902901881.

Georgieva, S., Tomas, J. M., & Navarro-Pérez, J. J. (2021). Systematic review and critical appraisal of Childhood Trauma Questionnaire—Short Form (CTQ-SF). *Child Abuse & Neglect*, *120*(2), 1–11. doi:10.1016/j.chiabu.2021.105223.

Goodwin, J. (1988). Munchausen's syndrome as a dissociative disorder. *Dissociation*, *1*(1), 54–60.

Goodwin, J. (1987). Mary Reynolds: A post-traumatic reinterpretation of a classic case of multiple personality disorder. *The Hillside Journal of Clinical Psychiatry*, *9*(1), 89–99.

Janet, P. (1889). *L'automatisme psychologique: Essai de psychologie expérimentale sur les formes inférieures de l'activité humaine*. Félix Alcan.

Johnson, J. G., Cohen, P., Kasen, S., & Brook, J. S. (2006). Dissociative disorders among adults in the community, impaired functioning, and axis I and II comorbidity. *Journal of Psychiatric Research*, *40*(2), 131–140. doi:10.1016/j.jpsychires.2005.03.003.

Kluft, R. P. (1987). An update on multiple personality disorder. *Psychiatric Services*, *38*(4), 363–373. doi:10.1176/ps.38.4.363.

Kluft, R. P., Braun, B. G., & Sachs, R. (1984). Multiple personality, intrafamilial abuse, and family psychiatry. *International Journal of Family Psychiatry*, *5*(4), 283–301.

Korol, S. (2008). Familial and social support as protective factors against the development of dissociative identity disorder. *Journal of Trauma & Dissociation*, *9*(2), 249–267. doi:10.1080/15299730802048744.

Laddis, A., Dell, P. F., & Korzekwa, M. (2017). Comparing the symptoms and mechanisms of "dissociation" in dissociative identity disorder and borderline personality disorder. *Journal of Trauma & Dissociation*, *18*(2), 139–173. doi:10.1080/15299732.2016.1194358.

Lebois, L. A., Wolff, J. D., Hill, S. B., Bigony, C. E., Winternitz, S., Ressler, K. J., & Kaufman, M. L. (2019). Preliminary evidence of a missing self-bias in face perception for individuals with dissociative identity disorder. *Journal of Trauma & Dissociation*, *20*(2), 140–164. doi:10.1080/15299732.2018.1547807.

Lindsley, H. L. (1989). Multiple personality disorder in persons with developmental disabilities. *Psychiatric Aspects of Mental Retardation Reviews*, *8*(10), 65–71.

McAllister, M. M. (2000). Dissociative identity disorder: A literature review. *Journal of Psychiatric and Mental Health Nursing*, *7*(1), 25–33. doi:10.1046/j.1365-2850.2000.00259.x.

McDowell, D. M., Levin, F. R., & Nunes, E. V. (1999). Dissociative identity disorder and substance abuse: The forgotten relationship. *Journal of Psychoactive Drugs*, *31*(1), 71–83. doi:10.1080/02791072.1999.10471728.

Merckelbach, H., Devilly, G. J., & Rassin, E. (2002). Alters in dissociative identity disorder: Metaphors or genuine entities? *Clinical Psychology Review*, *22*(4), 481–497. doi:10.1016/S0272-7358(01)00115-5.

Middleton, W., & Butler, J. (1998). Dissociative identity disorder: An Australian series. *Australian & New Zealand Journal of Psychiatry*, *32*(6), 794–804. doi:10.3109/00048679809073868.

Morton, J. (2018). Autonoesis and dissociative identity disorder. *Behavioral and Brain Sciences*, *41*(1), 1–63. doi:10.1017/S0140525X17001558.

Murat, Y.Ü. C. E., Karabekiroğlu, K., Yildirim, Z., Şahin, S., Sapmaz, D., Babadağı, Z., & Aydin, B. (2015). The psychiatric consequences of child and adolescent sexual abuse. *Nöro Psikiyatri Arşivi*, *52*(4), 393–399. doi:10.5152/npa.2015.7472.

Mychailyszyn, M. P., Brand, B. L., Webermann, A. R., Şar, V., & Draijer, N. (2021). Differentiating dissociative from non-dissociative disorders: A meta-analysis of the structured clinical interview for DSM dissociative disorders (SCID-D). *Journal of Trauma & Dissociation*, *22*(1), 19–34. doi:10.1080/15299732.2020.1760169.

Paez, A. (2017). Gray literature: An important resource in systematic reviews. *Journal of Evidence-Based Medicine*, *10*(3), 233–240. doi:10.1111/jebm.12266.

Page, M. J., McKenzie, J. E., Bossuyt, P. M., Boutron, I., Hoffmann, T. C., Mulrow, C. D., & Moher, D. (2021). The PRISMA 2020 statement: An updated guideline for reporting systematic reviews. *Systematic Reviews*, *10*(1), 1–11. doi:10.1186/s13643-021-01626-4.

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

Putnam, F. W., Guroff, J. J., Silberman, E. K., Barban, L., & Post, R. M. (1986). The clinical phenomenology of multiple personality disorder: Review of 100 recent cases. *The Journal of Clinical Psychiatry*, *47*(6), 285–293.

Reinders, A. A., Chalavi, S., Schlumpf, Y. R., Vissia, E. M., Nijenhuis, E. R., Jäncke, L., & Ecker, C. (2018). Neurodevelopmental origins of abnormal cortical morphology in dissociative identity disorder. *Acta Psychiatrica Scandinavica*, *137*(2), 157–170. doi:10.1111/acps.12839.

Reinders, A. A., Marquand, A. F., Schlumpf, Y. R., Chalavi, S., Vissia, E. M., Nijenhuis, E. R., & Veltman, D. J. (2019). Aiding the diagnosis of dissociative identity disorder: Pattern recognition study of brain biomarkers. *The British Journal of Psychiatry*, *215*(3), 536–544. doi:10.1192/bjp.2018.255.

Reinders, A. S., Nijenhuis, E. R., Quak, J., Korf, J., Haaksma, J., Paans, A. M., & den Boer, J. A. (2006). Psychobiological characteristics of dissociative identity disorder: A symptom provocation study. *Biological Psychiatry*, *60*(7), 730–740. doi:10.1016/j.biopsych.2005.12.019.

Riggs, S. A., Sahl, G., Greenwald, E., Atkison, H., Paulson, A., & Ross, C. A. (2007). Family environment and adult attachment as predictors of psychopathology and personality dysfunction among inpatient abuse survivors. *Violence and Victims*, *22*(5), 577–600. doi:10.1891/088667007782312159.

Rodewald, F., Wilhelm-Göling, C., Emrich, H. M., Reddemann, L., & Gast, U. (2011). Axis-I comorbidity in female patients with dissociative identity disorder and dissociative identity disorder not otherwise specified. *The Journal of Nervous and Mental Disease*, *199*(2), 122–131. doi:10.1097/NMD.0b013e318208314e.

Ross, C. A. (2021). The dissociative taxon and dissociative identity disorder. *Journal of Trauma & Dissociation*, *22*(5), 555–562. doi:10.1080/15299732.2020.1869645.

Ross, C. A., Ferrell, L., & Schroeder, E. (2014). Co-occurrence of dissociative identity disorder and borderline personality disorder. *Journal of Trauma & Dissociation*, *15*(1), 79–90. doi:10.1080/15299732.2013.834861.

Ross, C. A., Heber, S., & Anderson, G. (1990). The dissociative disorders interview schedule. *American Journal of Psychiatry*, *147*(12), 169–189. doi:10.1176/ajp.147.12.1698-b.

Ross, C. A., Heber, S., Norton, G. R., & Anderson, G. (1989). Somatic symptoms in multiple personality disorder. *Psychosomatics*, *30*(2), 154–160. doi:10.1016/S0033-3182(89)72296-9.

Ross, C. A., Miller, S. D., Bjornson, L., Reagor, P., Fraser, G. A., & Anderson, G. (1991). Abuse histories in 102 cases of multiple personality disorder. *The Canadian Journal of Psychiatry*, *36*(2), 97–101. doi:10.1177/070674379103600204.

Ross, C. A., & Norton, G. R. (1989). Effects of hypnosis on the features of multiple personality disorder. *American Journal of Clinical Hypnosis*, *32*(2), 99–106. doi:10.1080/00029157.1989.10402807.

Samuels, S. J., Ediger, K. A. M., Willcutt, J. R., & Palumbo, T. J. (2006). Role of automaticity in metacognition and literacy instruction. *Metacognition in literacy learning* (pp. 63–82). Routledge.

Santo, H. M. A. D. E., & Pio-Abreu, J. L. (2007). Dissociative disorders and other psychopathological groups: Exploring the differences through the Somatoform Dissociation Questionnaire (SDQ-20). *Brazilian Journal of Psychiatry*, *29*(4), 354–358. doi:10.1590/s1516-44462006005000039.

Şar, V., Akyüz, G., & Doğan, O. (2007). Prevalence of dissociative disorders among women in the general population. *Psychiatry Research*, *149*(1-3), 169–176. doi:10.1016/j.psychres.2006.01.005.

Şar, V., Dorahy, M. J., & Krüger, C. (2017). Revisiting the etiological aspects of dissociative identity disorder: A biopsychosocial perspective. *Psychology Research and Behavior Management*, *10*, 137–146. doi:10.2147/PRBM.S113743.

Şar, V., Önder, C., Kilincaslan, A., Zoroglu, S. S., & Alyanak, B. (2014). Dissociative identity disorder among adolescents: Prevalence in a university psychiatric outpatient unit. *Journal of Trauma & Dissociation*, *15*(4), 402–419. doi:10.1080/15299732.2013.864748.

Şar, V., Yargiç, İ., & Tutkun, H. (1996). Structured interview data on 35 cases of dissociative identity disorder in Turkey. *The American Journal of Psychiatry*, *153*(10), 1329–1333. doi:10.1176/ajp.153.10.1329.

Schultz, R., Braun, B. G., & Kluft, R. P. (1989). Multiple personality disorder: Phenomenology of selected variables in comparison to major depression. *Dissociation: Progress in the Dissociative Disorders*, *2*(1), 45–51.

Scroppo, J. C., Drob, S. L., Weinberger, J. L., & Eagle, P. (1998). Identifying dissociative identity disorder: A self-report and projective study. *Journal of Abnormal Psychology*, *107*(2), 272–284. doi:10.1037//0021-843x.107.2.272.

Smith, S. G. (1989). Multiple personality disorder with human and non-human subpersonality components. *Dissociation: Progress in the Dissociative Disorders*, *2*(1), 52–56.

Stern, C. R. (1984). The etiology of multiple personalities. *Psychiatric Clinics of North America*, *7*(1), 149–159. doi:10.1016/S0193-953X(18)30787-1.

Stuppy, L. J. (1996). *The relationship between dissociation and object-relations impairment in adult female incest survivor clients with and without personality splitting*. Andrews University. https://digitalcommons.andrews.edu/dissertations.

Sun, X., Zhu, C., & So, S. H. W. (2017). Dysfunctional metacognition across psychopathologies: A meta-analytic review. *European Psychiatry*, *45*, 139–153. doi:10.1016/j.eurpsy.2017.05.029.

Teicher, M. H., & Parigger, A. (2015). The Maltreatment and Abuse Chronology of Exposure' (MACE) Scale for the retrospective assessment of abuse and neglect during development. *PLoS ONE*, *10*(2), 1–37. doi:10.1371/journal.pone.0117423.

Tutkun, H., Yargiç, L. I., & Sar, V. (1996). Dissociative identity disorder presenting as hysterical psychosis. *Dissociation*, *9*(4), 244–252.

Van IJzendoorn, M. H., & Schuengel, C. (1996). The measurement of dissociation in normal and clinical populations: Meta-analytic validation of the Dissociative Experiences Scale (DES). *Clinical Psychology Review*, *16*(5), 365–382. doi:10.1016/0272-7358(96)00006-2.

Vissia, E. M., Giesen, M. E., Chalavi, S., Nijenhuis, E. R., Draijer, N., Brand, B. L., & Reinder, A. A. (2016). Is it trauma-or fantasy-based? Comparing dissociative identity disorder, post-traumatic stress disorder, simulators, and controls. *Acta Psychiatrica Scandinavica*, *134*(2), 111–128. doi:10.1111/acps.12590.

Whitebread, D., Coltman, P., Pasternak, D. P., Sangster, C., Grau, V., Bingham, S., & Demetriou, D. (2009). The development of two observational tools for assessing metacognition and self-regulated learning in young children. *Metacognition and Learning*, *4*(1), 63–85. doi:10.1007/s11409-008-9033-1.

Wilbur, C. B. (1984). Multiple personality and child abuse: An overview. *Psychiatric Clinics of North America*, *7*(1), 3–7. doi:10.1016/S0193-953X(18)30776-7.

World Health Organization. (2021). *International statistical classification of diseases and related health problems* (11th ed.). .

Yargiç, L. I., Şar, V., Tutkun, H., & Alyanak, B. (1998). Comparison of dissociative identity disorder with other diagnostic groups using a structured interview in Turkey. *Comprehensive Psychiatry*, *39*(6), 345–351. doi:10.1016/S0010-440X(98)90046-3.