

Novel treatment for dissociative disorders: Combining eHealth interventions and transdiagnostic factors for the treatment of dissociative disorders. A scoping review with a focus on depersonalization-derealization disorder

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Master Thesis

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22-06-2023

Author note

In this thesis, the guidelines of the American Psychological Association's (2020) *Publication manual of the American Psychological Association* (7th ed.) are applied (an exception is made for font size based on the thesis guidelines of the university of Twente. In the end, a list of abbreviations was added, since there are various similar definitions used repetitively throughout the whole master thesis.

Abstract

Background: Dissociation as a phenomenon is poorly understood. As a result, evidence for treatment regarding dissociative disorders (DD) is limited. The problems regarding treatment of DD can be illustrated by examining current issues concerning depersonalization-derealization disorder (DDD). Review of these problems indicates the need for novel treatment modalities, such as eHealth interventions. There is increasing evidence that mental disorders are better understood transdiagnostically. Combining eHealth interventions and transdiagnostic factors of DD might be a worthwhile endeavor. **Objective:** The first goal of the current study is to examine what potential effective treatment is for DD, specifically DD. The second goal is to identify the transdiagnostic factors of DD. The end goal is to assess whether transdiagnostic factors of DD can be targeted for treatment via eHealth. **Design:** Scoping review. Online databases and gray literature sources were used to identify 23 sources after the full database screening process. **Data synthesis:** The data was synthesized through a frequency count of the data and a basic content analysis. **Results:** Through the frequency count only one study was examined pertaining to the effectiveness of eHealth intervention. Through the frequency count five studies were examined related to transdiagnostic factors of DD. One of the five extracted transdiagnostic factors was new compared to the other 25 transdiagnostic factor identified via the basic content analysis. A total of 25 transdiagnostic factors were established. Whether transdiagnostic factors can be targeted for treatment for DD via eHealth cannot be derived conclusively from the findings, as no studies target the identified transdiagnostic factors of DD via eHealth. **Conclusion:** This scoping review provides the first preliminary evidence that eHealth interventions are not examined for the treatment of DD, including depersonalization-derealization disorder. This scoping review provides further evidence that there exist many transdiagnostic factors which can potentially be targeted for treatment of DD via eHealth. The findings do not currently support combining eHealth interventions and DD.

Keywords: Dissociation, transdiagnostic factors, dissociative disorders, depersonalization-derealization disorder, eHealth

Novel treatment for dissociative disorders: Combining eHealth interventions and transdiagnostic factors for the treatment of dissociative disorders. A scoping review with a focus on depersonalization-derealization disorder

Dissociation has been a neglected phenomenon for decades, despite being present in almost all psychiatric diagnoses, including more severe psychiatric disorders, e.g., *dissociative disorders* (DD) (Sar & Ross, 2006). Current treatment of DD is lacking, as on average it takes many years for patients with DD to receive the correct diagnosis, let alone targeted treatment (GGZ standaard, 2020). For example, in the case of *depersonalization-derealization disorder* (DDD), which is one of the five DD in the American Psychiatric Association's (2013) *Diagnostic and Statistical Manual of Mental Disorders* (5th ed.; *DSM-5*). Novel treatment modalities, such as *Electronic health (eHealth)* interventions are becoming increasingly popular as these interventions seem to be effective for a range of mental disorders (Hallgren et al., 2016; Hedman et al., 2017). Similarly, in the case of more serious mental illnesses, eHealth interventions have shown to be potentially effective (Granholm et al., 2012; Naslund et al., 2015). This way, eHealth interventions can arguably be effective for other serious mental illnesses or psychiatric disorders as well, e.g., DD. Current research into the psychopathology of mental disorders reveals that there is increasing evidence that DSM-5 disorders do not represent unique constructs but share underlying psychological processes within a common underlying construct (Dagleish et al., 2020). Treatment which is based on the *transdiagnostic factors* of DD could provide benefits over current treatments. Hence, by combining both eHealth as a novel treatment modality and the transdiagnostic factors of DD, current problems regarding DD could potentially be solved.

Similarities and differences between dissociation and dissociative disorders

Dissociation and DD have substantial overlap, but are not the same. Dissociation is a (psychological) state wherein there is a disconnect in the (subjective) integration of one or more psychological functions. Multiple psychological functions can be disrupted, such as mental function, perception, identity, memory, behavior and the self (Spitzer et al., 2006). In dissociation people experience detachment from themselves, from their surroundings, and other reality related experiences can be disrupted. Most of the dissociative experiences reflect normal daily occurrences (Lyssenko, et al., 2018). These dissociative experiences can be placed on a continuum from transient to pathological. Pathological dissociation starts when 'normal' psychological processes somewhere on the continuum go awry, for instance pathological dissociation tends to be classified as more severe, pervasive, and/or distressing than normal function (Spiegel et al., 2011). Nevertheless, the question of normality

compared to pathological dissociation remains ubiquitous (Rădulescu et al., 2020). The ‘more severe’ cases of dissociation are categorized in the DSM-5 as disorders. The DSM-5 distinguishes between five dissociative disorders: (1) Dissociative identity disorder (DID), (2) Dissociative amnesia, (3) Depersonalization-derealization disorder, (4) Other specified dissociative disorder, and (5) Unspecified dissociative disorder (American Psychiatric Association, 2013). Thus, the five DSM-5 disorders can be considered forms of pathological dissociation, in which dissociation is the core transdiagnostic factor.

Dissociation as transdiagnostic factor

Dissociation is considered a *transdiagnostic factor* of psychopathology. Dissociation is present in nearly all psychiatric diagnoses (Brand et al., 2009). Lyssenko et al. (2018) did a meta-analytic study and found that the highest dissociation scores were found for dissociative identity disorders, the second highest scores were found in post-traumatic stress disorder and the third highest scores were found in borderline personality disorder. Lower scores were found for conversion disorder, substance-related and addictive disorders, feeding and eating disorders, schizophrenia, anxiety disorder, obsessive-compulsive disorder, and affective disorders, in respective order. In a similar manner, it was found that dissociation is a risk factor for general psychopathology over and above neuroticism (Ellickson-Larew & Stasik-O’Brien, 2020). Hence, supporting the view that dissociation is a transdiagnostic factor.

Current obstacles in the treatment of dissociative disorders

Dissociation is a transdiagnostic factor, present in nearly all psychiatric disorders, nevertheless research into the diagnosis and prognosis of dissociative phenomena, and the effectiveness of current treatments of DD is limited (GGZ standaard, 2020). Patients with DD experience numerous problems related to psychopathology, treatment, and (longitudinal) outcomes (Hoeboer et al., 2020; Michelson et al., 1998; Rufer et al., 2006). As a result, on average it takes many years for patients with DD to receive the correct diagnosis, let alone targeted treatment (GGZ standaard, 2020). For instance, in some cases even seven up to 12 years (Hunter et al., 2017). Thus, there is a need for more research on DD, especially regarding treatment options for patients with DD to diminish these burdens.

Depersonalization-derealization disorder

The latter described issues concerning DD are exemplified by focusing on DDD. As the name of the disorder implies, depersonalization (DP) and derealization (DR) are the two main phenomena defining DDD. DP is detachment from the self, whereas DR is the perception of reality as unreal (Yang et al., 2022). There are two reasons why a focus on DDD illustrates current problems regarding treatment:

the etiology is complex and poorly understood, and current treatment is lacking, for instance psychological, experimental, and biological treatment.

The etiology of depersonalization-derealization disorder

Depersonalization-derealization disorder is a complex, poorly understood, and under-researched disorder. For example, authors of multiple studies allude to the notion that is poorly understood and under-researched, although, to my knowledge, the exact amount of research has not directly been examined (Baker et al., 2003; Knappik, 2022; Krishna et al., 2020; Michal et al., 2016; Mohan, 2020; Quigley et al., 2022; Watson, 2022). One issue as a result of under-research is that the pathogenesis of DDD is unknown. However, there are various theories on how DDD might manifest. One explanation is that DDD can be seen as the result of an overactivation of an innate psychobiological 'defense mechanism', as DR and DR are assumed to be innate survival responses against threat and danger to preserve physical resources via lowering anxiety and inducing hyperarousal (Simeon et al., 2021). A person can have a diathesis towards dissociative symptomology. Consequently, the diathesis interacts with psychological and/or chemical stressors. Chemical stressors can be acute intoxication of drugs, which can induce DDD, e.g., after a 'bad trip' developing Hallucinogen Persisting Perception Disorder (see Alderliefste, 2016, for details). In this way, the diathesis-stress model is a plausible explanation for the development of DDD.

The considered core elements of DDD, which are DP and DR are considered to occur in response to stress or psychological trauma. DP and DR, in essence, can be considered an extreme form of stress. Other forms of extreme stressors are (non-near-death) accidents or near-death experiences. Other forms of chronic stress or trauma, such as emotional abuse/neglect, a parent with severe mental illness or identity conflict within oneself, predispose people to the development of DDD. There are various other models which can explain DDD, although they differ in their understanding of DDD. One example is that DDD is an anxiety disorder. Hunter et al. (2003) claim that there is likely a moderative relationship between DDD and anxiety, specifically panic. However, Sierra et al. (2012) contest this view claiming anxiety is only apparent in mild cases of DDD, whereas in severe cases anxiety is reduced. Therefore, more research is needed into this topic to better understand the complex nature of the disorder.

Treatment approaches of depersonalization-derealization disorder and the other dissociative disorders

There are multiple approaches to the treatment of DD, in the case of DDD most of the psychological, experimental and biological interventions have limited evidence being effective as a treatment modality. In terms of psychological treatment, cognitive behavioral therapy (CBT) has shown

to be somewhat effective (Hunter et al., 2005). A core principle of this model is that catastrophic misinterpretations of normal day-to-day events indicate a serious mental disorder and thus perpetuate a vicious cycle of anxiety (Hunter et al, 2003). Psychodynamic approaches can arguably be helpful, although these are based on case reports. Other experimental approaches, such as trauma-focused therapy, hypnosis, group therapy, electro-dermal biofeedback, have some benefit in alleviating distress in DDD. Trauma-focused therapy is helpful in cases where there is a history of trauma. The data on hypnosis is limited, perhaps due to the claim of some experts that patients with DDD show limited hypnosis suggestibility (Simeon, 2004; Simeon et al., 2021). Group therapy for DDD appeared to be primarily effective, but group therapy has only been pilot tested yet (see Flückiger et al., 2022, for details). At last, one review examined evidence-based treatments for DDD and found one randomized control trial in the systematic review comparing psychotherapy to control. However, no evidence was found for effectiveness of psychological interventions (Somer et al., 2013). Medications tend to be prescribed 'off-label' by psychiatrists, which is the use of medication for a certain population without substantial and direct research in this population. The evidence regarding treatment for DDD with medications in randomized controlled trials is limited or not robust, therefore treatment with medications have limited effects and can in instances exacerbate symptoms. Hence, there is a paucity of evidence-based treatments for DDD.

Limited evidence of treatment approaches is not exclusive to DDD. A review examining treatment for DD revealed various design issues in the included study (Brand et al., 2009). Although a preliminary positive effect was found on a wide range of symptoms, the studies included were methodologically flawed. Another issue concerned treatment approaches, which were not adequately described, even more strikingly in some cases not even described at all (Brand et al, 2009). The systematic review by Sutar and Sahu (2019) examined pharmacological options for DD in general, not only for DDD, in which modest evidence for some pharmacological options was found for all DD. However, the study revealed large heterogeneity and no distinction between each individual DD could be made. Therefore, the claim was made that it would be unrealistic to study these DD in isolation or, i.e., advocating for a transdiagnostic approach. Taken together these findings, the numerous research and treatment related problems illustrate the need for novel treatment options, and combining it with using a transdiagnostic approach. A novel approach to treatment of mental health problems is eHealth, which can potentially fill that treatment gap.

eHealth

eHealth interventions can potentially be effective in treating DD. Various eHealth interventions

have already shown to have a myriad of benefits for the treatment of mental disorders (Al-Qahtani & Al-Juda, 2018; Marzano et al., 2005; Seppälä et al., 2019). For instance, telemedicine interventions have demonstrated to improve access to treatment, potentially be cost-effective and enhance treatment related factors (Bashshur et al., 2016). Furthermore, remote eHealth and mobile health interventions focusing on self-management and relapse prevention, adherence to medication, promoting health and wellness, and symptom monitoring for patients with serious psychopathology (e.g., schizophrenia, bipolar disorder, and schizoaffective disorder), have shown to be feasible and acceptable (Naslund et al., 2015). In primary care eHealth interventions have shown to have a small effect on depression and anxiety symptoms, while having moderate effects in comparison to waiting lists for treatment (Massoudi et al., 2019). As such, these examples indicate that there are many possibilities for targeting mental health disorders, e.g., DD, particularly DDD, via eHealth interventions with some already revealed to be effective in targeting mental health disorders.

Transdiagnostic factors of dissociative disorders

There has been some exploration of transdiagnostic factors of DD, yet more is warranted. Besides dissociation as established transdiagnostic factor, there are other transdiagnostic factors pertaining to DD. For instance, Lynn et al. (2022) analyzed various variables related to DD by using multivariable analyses. For instance, 'emotional dysregulation' exhibited a relationship with dissociation. Specifically, 'alexithymia' and 'impulsivity', which are considered elements of emotional dysregulation, were reported to correlate with dissociation. Furthermore, sleep related variables were linked with dissociation and depersonalization. Sleep constitutes of the two transdiagnostic factors 'hyperassociativity' and 'meta-cognition', although these are not exclusive to sleep. Other variables that were derived, were for example 'fantasy proneness', 'attentional control', 'cognitive failures', 'suggestibility'. The last variables derived were 'stress' and 'trauma'. Thus, a transtheoretical approach towards understanding of DD, including DDD, seems promising, consequently these transdiagnostic factors could arguably be used for improving current treatment related issues.

Combining treatment of dissociative disorder with eHealth and transdiagnostic factors

Novel treatment approaches, such as eHealth seem promising, as many eHealth applications are already effective for treating serious mental health disorders. Additionally, eHealth applications target transdiagnostic factors also present in DD, including DDD. In this way, it has the potential to improve the treatment of DD. For example, eHealth has shown to improve sleep symptoms of sleep disorders (Arora et al., 2020). Sleep disturbance has shown to be one, amongst others, of the transdiagnostic factors

related to DD, particularly DDD (Lynn et al., 2022). The present thesis explores the potential effectiveness of eHealth interventions for the treatment of DD, and specifically DDD. It further identifies the transdiagnostic factors of DD, including DDD. In the end, the goal is to discuss to what extent transdiagnostic factors of DD can be combined for treatment with eHealth and base recommendations upon the findings.

Research objective

The current scoping review gives a comprehensive overview of the nature and extent of current research evidence on effectiveness of eHealth interventions for DD, and DDD. Second, it identifies what the transdiagnostic factors of DD, and DDD are. This review identifies study and intervention characteristics and related findings by examining and combining:

- 1) What is the potential effectiveness of eHealth interventions regarding the treatment of dissociative disorders and depersonalization-derealization disorder?
- 2) What are the transdiagnostic factors present in dissociative disorders and specifically depersonalization derealization disorder?

Methods

Research design

This systematic scoping review used the protocol of Peters et al. (2015) on conducting systematic scoping reviews and the protocol reporting guidelines of the PRISMA-ScR extension by Tricco et al. (2018). For an overview of the applied PRISMA-ScR extension guidelines to this research. Scoping reviews map key characteristics of a research area to give a synthesis of emerging evidence, in essence giving an overview of the body of literature. The overview of the body of literature is preliminary regarding size and scope (Grant et al., 2009; Peters et al., 2015). Systematic scoping reviews typically aim to identify research gaps and make future recommendations (Peters et al., 2015).

Eligibility criteria

The language of the study must be either English or Dutch otherwise the study was excluded. The choice was made to include gray literature. The main reason for this inclusion criteria is that available evidence for DD is overall limited. In this context, the recommendations by Paez (2018) are used for the inclusion of gray literature. Any outcome measure of eHealth effectiveness on dissociative disorder is included. Papers examining other disorders than DSM-IV or DSM-5 criteria for DD were excluded. Other forms of classification are also allowed. e.g., World Health Organization's (2016)

International Classification of Diseases and Related Health Problems (10th.; ICD-10), and World Health Organization's (2019) *International Classification of Diseases and Related Health Problems (11th.; ICD-11)* (World Health Organization, 2016, 2019). All forms of study design were included. Participants before adolescence, were excluded, since the onset of dissociative symptoms, in particular in DDD, is later than adolescence (Shimuzu & Sakamoto, 1986). The study excludes any intervention that is not eHealth related, for example, face-to-face therapy. The exception is made for combinatory interventions. 'Blended treatment' is such an exception, as the intervention combines face-to-face therapy with eHealth (Erbe et al., 2017).

Search strategy

The electronic databases 'Scopus', 'Web of Science', 'PsychINFO' and "Wiley Online Library" were chosen. The electronic databases Scopus and Web of science were chosen, since they have a broad scope on medical, psychological and social dimensions. PsychINFO was included, due to it having a narrower psychological focus. Wiley Online Library was included, because a preliminary search revealed more possible relevant hits compared to the other broader scope databases. The search included any time period.

Each of the literature databases were searched iteratively during the search process to ensure an exhaustive list of results. The search terms were refined during the process to maximize the outcome of literature sources. The final search was conducted on 21 may. For both research question separate search strings were used. For instance, the string for research question 2 is: *TITLE-ABS-KEY ("dissociative*" OR "depersonalization disorder" OR "dissociation" OR "depersonalization" OR "derealization" OR "depersonalization/derealization" OR "depersonalization/derealization disorder" OR "pathological dissociation") AND TITLE-ABS-KEY (transdiagnostic OR "transdiagnostic factors" OR transdiagnostic* OR "transtheoretical")*. The string for hypothesis 2 is: *TITLE-ABS-KEY ("dissociative*" OR "depersonalization disorder" OR "dissociation" OR "depersonalization" OR "derealization") AND TITLE-ABS-KEY (mHealth OR "eHealth" OR "electronic health" OR "mobile health" OR "eHealth Intervention" OR "telemedicine" OR "Telehealth")*. The search strings were developed by the author of the present thesis and supported by an information specialist. The author created the initial search string by researching the literature on dissociative symptomology, DD, for instance depersonalization-derealization disorder, and eHealth. An information specialist gave input to further improve the search strings based on initial searches together. The information specialist had background knowledge on the scope of the thesis and expertise on conducting scoping reviews. The examples given were created for Scopus. The search was conducted by the author of the present thesis.

Gray search

Gray literature searches were conducted for both research questions. Gray literature is included, since the available evidence for DD is overall limited. The inclusion of gray literature reduced publication bias and facilitated an overall more balanced approach of the literature concerning the scope of the present thesis (Paez, 2018). The caveat to using gray literature is that it is not peer-reviewed or is unpublished, which can affect the methodological quality of the study. Therefore, a critical appraisal checklist was used, specifically made for gray literature, which is the AACODS checklist (Tyndal, 2010).

The searches were conducted in databases for websites, gray literature databases and search engines. For the sources of gray literature, a template created by Stapelton (2018) was used to derive data presented in Table 1 (University of Waterloo, 2018). See the supplementary appendix for the full explanation, which are not essential to understanding the gray search, as these are similar to that of the database search. For strategy 1 a website was searched, which was the website of International Society for the Study of Trauma and Dissociation as its mission is to focus on specifically dissociation (and trauma). Strategy 2 was used for the (gray) databases, e.g., Scopus and Web of Science. The (gray) database 'Open gray' was searched as it is has the largest gray literature database on gray literature. PsyArXiv was used as it is a pre-print service for psychological science. During and post-COVID 19 eHealth research for mental health quickly developed by using pre-prints the development process can be evaded, as pre-print can be read before the peer-review process (Ellis, 2021). PsychArchives was searched as it is wide ranging repository for psychological science, including preregistrations, preprints and more. For search engines strategy 3 was applied, which were 'Google Scholar' and 'Mednar'. Google Scholar was searched, as it is the biggest search engine for scientific research. In a similar manner, strategy 3 was used for 'Mednar' a deep web engine, which is used to examine non-indexed literature sources. In conclusion, gray literature provides an additional benefit for the present thesis scope.

Study selection

For both research questions, with different search strings and strategies, the same initial screening steps were conducted. Covidence (2023), which is a web-based software platform, was used for the study selection process in the databases, whereas the gray searches were screened manually. In the first step studies were screened on title and abstract. In the second step remaining studies were fully read and eligibility criteria were applied to decide which studies were included and excluded. Additionally, backward and forward snowballing was applied. First, backward snowballing was done by inspecting the reference list of the full text studies. Afterwards, forward snowballing by reading the studies that cited the included studies. The rationale being that a hybrid search (including backwards

and forwards snowballing) is superior to a standard systematic search. Hybrid in this context meaning a pre-planned combination of two systematic approaches, e.g., a database search plus the addition of snowballing (Wohlin et al., 2022). Backward snowballing was conducted first. Afterwards, the initial studies from the data bases plus the gathered studies from backward snowballing were forward snowballed. Backward snowballing was not done for studies gained from forwards snowballing. Backward snowballing was conducted during the full-review process instead of afterwards, as this would increase the probability of finding relevant studies.

Data extraction

A data extraction form was created for both research questions. In Table 2 for research question 1: What is the potential effectiveness of eHealth interventions regarding the treatment of dissociative disorders and depersonalization-derealization disorder? The data extraction form included key information on general study characteristics. It further included detailed information on methodology, for instance it was necessary to include information on classification of DD otherwise it would be unclear whether DD were extracted or dissociative symptomology more broadly. The last extracted data were related to assessing whether an intervention was effective.

Table 2

Data extraction form 1

General study description	
Author	- Who is/are the author(s) of the study?
Year of publication	- What year was the study published?
Research questions / hypotheses	- What are the research questions / hypotheses of the study?
Methodology	
Method	- What method is used in the study? E.g., cross-sectional, longitudinal and others.
Location of the study	- In which country is the study published?
Participants	- What are the characteristics of the sample? E.g., presenting problem (dissociative disorder), gender and mean age/SD.
Classification/diagnosis	- What classification is described? E.g., DSM-5 or other forms of classification.

Table 2 (continued)

Effectiveness of eHealth interventions	
Type of intervention	- <i>What type of e-health intervention is used?</i>
Intervention duration	- <i>What was the duration of the eHealth intervention?</i>
Therapeutic approaches	- <i>What is the therapeutic approach used? E.g., cognitive-behavioural therapy or others. (Only relevant if there was a therapist involved)</i>
Therapist	- <i>Was there a therapist involved when using an eHealth intervention?</i>
Time of delivery	- <i>What was the time of delivery of the intervention? E.g., after 1 year of treatment with other interventions.</i>
Outcomes and details	- <i>What is described in relation to effectiveness of eHealth for dissociative symptomology?</i>
	- <i>What are the statistical effects described?</i>

In Table 3 for research question 2: What are the transdiagnostic factors present in dissociative disorders and specifically depersonalization derealization disorder? The data extraction form included general study characteristics. It further included detailed information on methodology. The last section is related to transdiagnostic factors.

Table 3*Data extraction form 2*

General study description	
Author	- <i>Who is/are the author(s) of the study?</i>
Year of publication	- <i>What year was the study published?</i>
Research questions / hypotheses	- <i>What are the research questions / hypotheses of the study?</i>
Methodology	
Method	- <i>What method is used in the study? E.g., cross-sectional, longitudinal and others?</i>
Location of the study	- <i>In which country is the study published</i>
Participants	- <i>What are the characteristics of the sample? E.g., presenting problem (dissociative disorder), gender and mean age/SD.</i>

Table 3 (continued)

Transdiagnostic factors of dissociative phenomena	
<i>Aim of the study</i>	- What is described in relation to transdiagnostic factors of dissociative disorders? Is dissociation itself the transdiagnostic factor?
<i>Variables related to transdiagnostic factors</i>	- What (possible) transdiagnostic factor is described? - What is the domain of the transdiagnostic construct described? E.g., described in the context of treatment, classification or other contexts. - What transdiagnostic type is described, e.g., across two disorders, conditions, spectra or others.
<i>Classification/diagnosis</i>	- What classification is described? E.g., DSM-5 or other forms of classification. - What is the type of diagnosis described? E.g., DSM-5 diagnosis as primary or other diagnoses or presence of a non-clinical sample.
Findings	
<i>Findings</i>	-What is the main finding? -What is the secondary finding?
<i>Measurement</i>	-Was there a psychometric measurement used?

Data synthesis

Construction of the data extraction tools

For the construction of the variable list, data from earlier studies were used, which described both broad definitions of dissociative symptomology and transdiagnostic factors. Dissociative symptomology has various definitions in the literature (Indelli et al., 2018). In Table 4 the variable list can be found which was used during the screening and selection process. Moreover, already examined transdiagnostic factors were included in the variable list, for example the transdiagnostic factors analyzed by Lynn et al. (2022). These transdiagnostic factors were: emotional dysregulation (e.g., alexithymia and impulsivity); sleep (e.g., hyperassociativity and meta-cognition); fantasy proneness; attentional control; cognitive failures; suggestibility; psychological distress, and trauma. Dissociation can be considered a transdiagnostic factor itself, conversely DD can have transdiagnostic factors as well. Therefore, in the variable list a distinction was made between both (Ellickson-Larew & Stasik-O'Brien, 2020). These data from the three studies were used to create the variable list to further gather data on DD and transdiagnostic factors, while also building upon previously gathered data. However, these three studies were not included in the data syntheses. The variable list is included in the results, possibly with new transdiagnostic constructs of dissociative disorder. In this way, an overview of all the scoped transdiagnostic factors is given, which is used to give recommendations.

Table 4*Variable list*

Various definitions of dissociative symptomology
Depersonalization
Derealization
Cognitive avoidance
Dissociative amnesia
Emotional numbing
Flashback
Freezing
Spacing out
Out-of-body experience
Conversion disorder
Hypnotic analgesia
Detachment
Compartmentalization
Absorption
Dissociative stupor
Disintegrated experience
Disintegrated experience
Dissociative fugue
Perceptual alteration
Emotional constriction
Disengagement
Somatoform dissociation
Imaginative involvement
Hypnotizability
Reduced awareness
Trance
Spirit possession
Identity confusion
Multiple personality
Identity alteration
Structural division
Transdiagnostic factors of dissociative disorders
Emotional dysregulation, e.g., Alexithymia and Impulsivity
Sleep, e.g., Hyperassociativity and Metacognition
Fantasy proneness
Attentional control
Cognitive failures
Suggestibility
Psychological distress
Trauma
Dissociation

Note. Adapted from "In Search of Connection: Towards a transdiagnostic view of dissociative phenomena through Research Domain Criteria (RDoC) framework," by P. Indelli, J. Landeira-Fernandez and D. Mograbi, (2018). *Psicologia Clínica*, 30. p. 518 (<http://dx.doi.org/10.33208/PC1980-5438v0030n03A06>). Copyright by Indelli et al. (2018). And the transdiagnostic factors in Lynn (2022) et al. are extracted into the table. Adapted from "Dissociation and dissociative disorders reconsidered: Beyond sociocognitive and trauma models toward a transtheoretical framework," by S. J. Lynn, C. Polizzi, H. Merckelbach, C.-D. Chiu, R. Maxwell, D. van Heugten and S. O. Lilienfeld (2022). *Annual Review of Clinical Psychology*, 18(1), 259–289 (<https://doi.org/10.1146/annurev-clinpsy-081219-102424>). And dissociation as transdiagnostic factor. Adapted from "Dissociation as a multidimensional transdiagnostic symptom," S. Ellickson-Larew, S. M. Stasik-O'Brien, K. Stanton and D., Watson (2020). *Psychology of Consciousness: Theory, Research, and Practice*, 7(2), 126–150 (<https://doi.org/10.1037/cns0000218>). . Adapted from "Dissociation as a multidimensional transdiagnostic symptom," S. Ellickson-Larew, S. M. Stasik-O'Brien, K. Stanton and D., Watson (2020). *Psychology of Consciousness: Theory, Research, and Practice*, 7(2), 126–150 (<https://doi.org/10.1037/cns0000218>)

Although the research question on effectiveness tends to fall out of the scope of a scoping review, a scoping review as method was chosen instead of a systematic review. The aim of a scoping review is to give a descriptive representation of the data and optionally using basic synthesizing methods (Pollock et al., 2023). Research questions on effectiveness are typically answered via a systematic reviews or meta-analyses (Peters et al., 2015; Pollock et al., 2023). However, to my knowledge, eHealth for DD has not previously been examined in a scoping review design, thus it is unknown whether eHealth intervention can be effective at all. A scoping review is warranted over a systematic review, when current practices are unknown, e.g., eHealth interventions for DD (Munn et al., 2018). Therefore, to give an answer to the research questions 1 statistical relationship(s) between dissociative symptomatology and eHealth interventions were included. To assess whether it was an effective eHealth intervention, effect-sizes were extracted. A *a priori* correlational cut-off points were used to interpret the strength of the correlations by Cohen (1998). A correlation of .10 to 0.30 is labeled as a small effect size, moderate is .30 to .50, and large .80 and above. Thus, the potential effectiveness can be answered through description of effect sizes. This way, this scoping review can give an explorative indication of what the potential effectiveness of eHealth for DD is (Munn et al., 2018).

Data synthesis of the results

The data synthesis of the results was guided by the recommendations of Pollock et al. (2023), which are a 'frequency count of data' for quantitative data and a 'basic content analysis' for qualitative data. The results of research question 1: What is the potential effectiveness of eHealth interventions regarding the treatment of dissociative disorders and depersonalization-derealization disorder? Were extracted via a frequency count of the data. For example, how many times was the same diagnostic construct described on item: "*What (possible) transdiagnostic factor is described?*". For research question 2: What are the transdiagnostic factors present in dissociative disorders and specifically depersonalization derealization disorder? A frequency count was used as well. For example, how often is a certain design described: *What method is used in the study? E.g., cross-sectional, longitudinal and*

others. Additionally, qualitative studies were included in the data synthesis for research question 2, thus how often a certain review was described. The frequency count for both research question is presented first and afterwards the remaining general study characteristics

The qualitative data in the studies were synthesized deductively and inductively through a basic content analysis. For instance, the item from the data extraction form: "*What is described in relation to transdiagnostic factors of dissociative disorders? Is dissociation itself the transdiagnostic factor?*". The coding process of the basic content analysis was conducted in three steps. First, initial codes were created, which were iteratively reviewed until broad categories were formed. In the second step the codes were revised until categories were established. For instance, 'meta-cognition' and 'deficits in meta-cognition' essentially described the same thing, thus the choice was made to merge both into one succinct category, i.e., 'meta-cognition'. Afterwards, some of the resulting codes were then again allotted to the framework based on the definitions of transdiagnostic factors by van Heycop ten Ham et al. (2014). The definitions used focused on psychological dimensions, whereas the other definitions were not included in the framework. The definitions used are: symptoms, psychological factors, behaviors, coping strategies, and protective factors. Symptoms refer to similar symptoms in various disorders. Psychological factors can refer to aspects of cognition, positive self-image, and more, in multiple disorders. Behaviors, such as aggression or addictions, amongst disorders. Coping strategies can refer to rumination or detachment. Protective factors are universal, for instance resilience. Miscellaneous is an overarching category added for the transdiagnostic factors which cannot be allotted to any of the other categories, for instance when it cannot be precisely derived from the data under which definition it should be placed. At last, excerpts from the coding process are used to illustrate why a certain transdiagnostic factor is allotted to a particular definition in the framework.

Refinement of the data extraction form

Statistical relationships were not extracted for research question 2, since it would not help answer research question 2. Therefore, outcomes were changed into findings. During the creation of data extraction form 1 no question pertaining to classification and type of diagnosis was added. This would be problematic, as no clear distinction between DD and dissociative symptomology was made, which is needed to give a differentiated answer to research question 1. Additionally, diagnoses in DSM-5 and previous version differ from each other, and differ from the ICD-10 and the most recent version. Therefore, a new item was added to data extraction form 1: "classification/diagnosis". Extra data on percentage of the sample was extracted if the study did not directly examine the effectiveness of eHealth

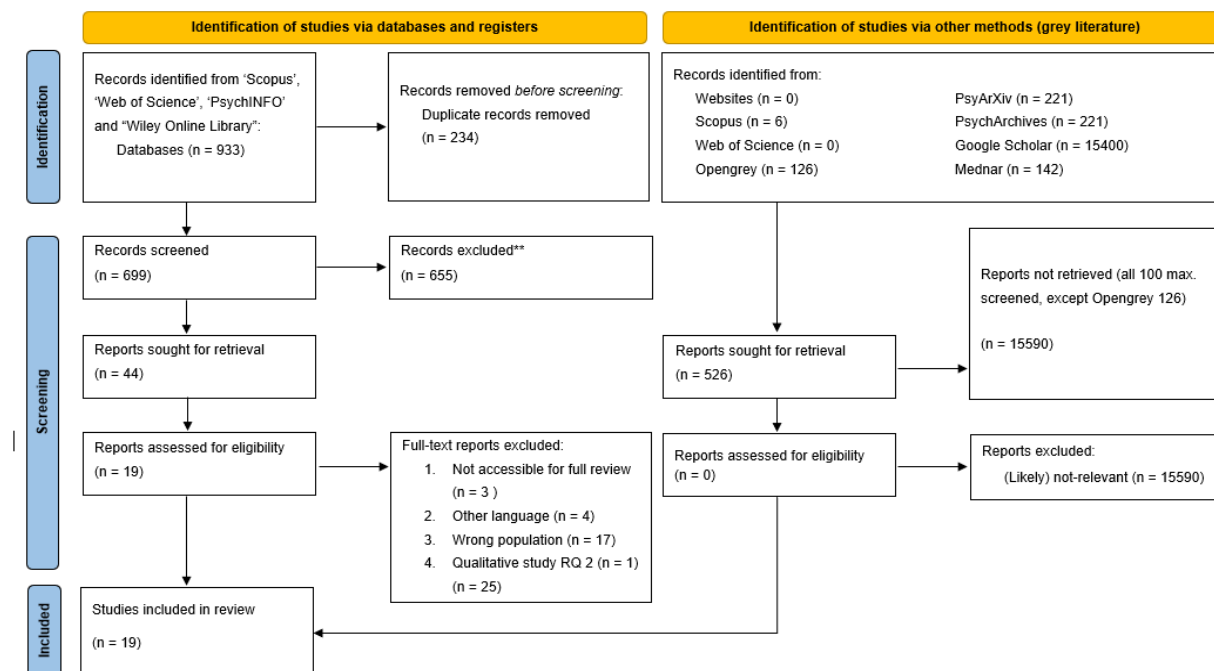
in DD. Additionally, data on moment of measurement was extracted, as this was not extracted via data extraction form 1. It would otherwise be unclear when an effect of an intervention was measured.

Results

A flowchart showing the process for both the database and gray literature study selection, according to the PRISMA-ScR guidelines by Tricco et al. (2018), is presented in *figure 1*.

Figure 1

PRISMA-ScR Flowchart



Selection of sources from the databases

After 234 duplicates were removed, a total of 699 studies were screened. Based on the title and abstract, 655 were excluded, with the remaining 44 to be retrieved and assessed for eligibility. Of the 44 studies, 25 were excluded upon full-review for the following reasons: four did not meet the language criterion, three were not accessible for full-review, one was a review qualitative data in relation to research question 2 and the remaining 17 did not meet the criteria for dissociative disorders (DD) in the DSM-IV or DSM-5. The remaining 19 were considered eligible for this scoping review. After backwards snowballing of the abstract four additional studies were considered eligible for this scoping review. Forward snowballing revealed no additional studies for screening. In total 23 studies derived from databases were considered eligible.

Selection of sources from the gray literature

Targeted search on the website of the international society for trauma and dissociation did not give any results for screening. Search for gray literature in databases gave 6 for screening in Scopus and 0 in web of science. After screening, all results were excluded. In Opengrey 126 results were screened, all of the results were excluded. In PsychArXiv only the first 50 results were screened (a total of 100 considering the two separate searches for each research question), as most of the results were not specific to the keyterms and the total to be screened was 3840. The similar maximum of 100 hits was used for the other gray searches, which was a pragmatic choice made. For Psycharchives, Google Scholar, and Mednar a similar pragmatic choice was made to screen only the first 100 results of the total 221. All were excluded. In sum, a total of 532 studies were screened, duplicates overlapping with the main databases search were removed during the process. All studies were excluded after screening, due to the eligibility criteria. Thus, no studies were selected for full-review.

The effectiveness of eHealth interventions in dissociative disorders (RQ1)

Study characteristics

Of the 23 included studies, one study pertained to research question 1. Table 5 summarizes the findings concerning measurements of the effectiveness of eHealth interventions on DD. In Table 6 the relevant study characteristics can be found. In the study multiple disorders were examined, including depersonalization disorder, according to ICD-10 criteria, as presenting problem of interest. The study used an eHealth intervention to target depersonalization-derealization disorder (DDD), which was a secondary outcome of the study. The main goal of the study was to test the feasibility of a psychodynamic web-based self-help intervention for psychosomatic inpatients. The sample of this study consisted of 82 subjects. Of this sample 22% ($n = 18$) were diagnosed with DDD. The study had a randomized control design.

The primary outcome revealed that the majority was satisfied with the intervention. The secondary main outcome of interest was the improvement of the DDD group compared to the control group. The scale used was the 2-item version of the Cambridge Depersonalization Scale (CDS-2) describing the feeling of being detached from one's body, thoughts, or emotions. The CDS-2 sum score (range 0-6, scoring format is identical with the GAD-2) correlates strongly with clinician rated depersonalization severity ($r=.77$) with a sensitivity of 78.9% and a specificity of 85.7% (Michal et al., 2011). In the group who completed the intervention, the F -test did not show a significant reduction of symptoms on the CDS-2 $F(1, 43) = 6.71, p = .08$. The effect size was moderate ($d = 0.55$.)

Table 5*Effectiveness of eHealth intervention(s) (RQ1)*

Author(s)	Measurement(s) (p=primary outcome, s=secondary outcome)	Moment of assessment	Primary outcome	Secondary outcome	Measurement
Zwerenz et al. (2017)	Client Satisfaction Questionnaire (CSQ-8), p Cambridge Depersonalization Scale (CDS-2), s	Baseline (T0), at 10 weeks (T1) and 2 months later for follow-up (T2)	The majority was mostly (57%, 12/21) or very satisfied (38%, 8/21); only one participant (5%, 1/21) was slightly dissatisfied (based on the one item of the CSQ-8). Asked whether they would do the Web-based self-help program once more if they needed help, more than half of the participants (57%, 12/21) said "definitely yes," about one third (29%, 6/21) said, "I believe so," and only few (14%, 3/21) answered, "I do not believe so."	The intervention group improved regarding the secondary outcome criteria, whereas the wait list control group deteriorated	In the completion of the intervention group the effects were not significant compared to the control group on the CSD-2. ($F(1, 43) = 6.71, p = .08$). The effect size was moderate ($d = 0.55$).

Table 6*Study characteristics (RQ1)*

Author(s)	Type of intervention	Therapist	Therapeutic approach	Time of delivery	Intervention duration
Zwerenz et al. (2017)	Web-based self-help	No therapist involved	Transdiagnostic, psychodynamic	Following discharge the intervention group got the guided intervention for 10 weeks. After 10 weeks the waiting-list intervention group got the access to the unguided version.	10 weeks

The transdiagnostic factors of dissociative disorders (RQ2)

Study characteristics

A total of 19 studies pertained to both the frequency count of the data and basic content analysis, of which five studies were reviewed for the frequency count. Table 7 summarizes the design and characteristics of the reviewed studies. To answer RQ2, multiple transdiagnostic constructs were identified: hippocampal global and subfield volumes in relation to dissociative amnesia, absorption; betrayal trauma, social occupational participation; emotional dysregulation; experiential avoidance, deficits in meta-consciousness; depersonalization and derealization; alexithymia, absorption and cognitive failures. Of each design there was only one: between-groups, online survey, case study, case study, and mixed methods. Similarly, all countries of origin differed: United Kingdom, China, Iran, Turkey, and United States of America. The sample sizes ranged from 5 to 1301.

Table 8 summarizes the further characteristics of the reviewed studies related to the identified transdiagnostic factors. Of all five studies, outcomes supported the (possible) transdiagnostic construct described. In four studies different aspects of dissociation in DD were inspected (and other psychiatric disorders), and one study examined dissociation in DD and broader dissociative symptomology. Each context of the study differed. The most used scale was the DES in three studies. The SCID-D was the second most used scale in two studies. The other scales were only used once for each study. All five studies studied different aspects of dissociation and DD.

Table 9 summarizes the final characteristics pertaining to the participants of the reviewed studies. In most studies (4 out of 5) participants were female. The average age is 32.65 and the average standard deviation is 6.98. The majority were classified according to the DSM-IV (3 out of 5), whereas the other (2 out of 5) according to the DSM-5 criteria. Dissociative identity disorder was the most often presenting problem.

Table 7*Study characteristics (RQ2)*

Authors	Research questions / hypotheses	Country	Method	Sample size	(Possible) transdiagnostic factor(s)
Dimitrova et al. (2021)	Predicted Hippocampal volumes would be smaller in individuals with DID as compared to the control group, and that hippocampal volumes would negatively correlate severity of dissociative amnesia and with trauma.	United Kingdom	Between groups	75	Hippocampal global and subfield volumes in relation to dissociative amnesia, absorption and DEP and DER symptoms
Fung et al. (2022)	Investigated DD in a Chinese sample of community health service users.	China	Online survey	376	Betrayal trauma
Mohajerin et al. (2020)	Participants would have stable scores on measures of dissociation, emotional dysregulation, and comorbid disorders at baseline, exhibit improvements at the end of the treatment, and maintain improvements at a 6-month follow-up.	Iran	Case study	5	Emotional-dysregulation, experiential avoidance, deficits in meta-consciousness
Sar et al. (2016)	Examined psychometric features of DEP and DER, and gathered data on non-clinical population, and evaluated experiences of the sample with depersonalization and derealization	Turkey	Mixed methods (Self-report and clinical interview)	1301	DEP and DER
Simeon et al. (2009)	Comparison between alexithymia, absorption and cognitive failures, and another trauma-spectrum disorder to examine the specificity of the findings to dissociation.	United States of America	Cross-sectional	102	Alexithymia, absorption and cognitive failures

Note. Dissociative disorders are noted as DD. Dissociative identity disorder is noted as DID. Depersonalization (DEP) and derealization (DER) are noted as such and borderline personality disorders as BPD. PTSD refers to post-traumatic stress syndrome. DPD refers to depersonalization disorder (DSM-IV). DDD refers to depersonalization-derealization disorder (DSM-5).

Table 8*Further study characteristics (RQ2)*

Authors	Context of the transdiagnostic factor	Transdiagnostic factor(s) type	Findings (primary)	Findings (secondary)	Scale
Dimitrova et al. (2021)	Biomarkers	Across dissociative symptomology	DID group only dissociative amnesia and total dissociation symptom scores and not absorption or DEP/DER correlated significantly and negatively with hippocampal volume.	Negative correlations were only found for the CA1 hippocampal subfield.	The Structural Clinical Interview for DSM-IV Dissociative Disorders (SCID-D) Dissociative Experiences Scale (DES) Traumatic experience checklist (TEC)
Fung et al. (2022)	Prevalence	Across DD	DDs are associated with betrayal trauma and extensive comorbidities.	DDs are associated with difficulties in social/occupational participation (indicator of well-being in mental healthcare and rehabilitation settings).	The Brief Betrayal Trauma Survey (BBTS), the 5-item Somatoform Dissociation Questionnaire (SDQ-5) Selected sections of the Self-report Dissociative Disorders Interview Schedule (SR-DDIS) The International Trauma Questionnaire (ITQ) The Patient Health Questionnaire-9 (PHQ-9) The Participation Measure-3 Domains, 4 Dimensions (PM3D4D)
Mohajerin et al. (2020)	Treatment (the Unified Protocol for Emotional Disorders, a cognitive behavioral intervention)	In DID	After treatment, none of the participants met full criteria for any diagnosis.	All participants met no criteria for any diagnosis. All of the participants still fulfilled DSM-5 for DID, which is two or more distinct personality states.	Structured Clinical Interview for DSM-IV Axis I Disorders (SCID-I) Dissociative Experience Scale (DES)

Table 8 (continued)

Sar et al. (2016)	Psychometric features, prevalence and experiences of DER and DEP	Across DD and BPD	Participants with concurrent DD and BPD had the highest scores for DEP and DER in the clinical interview and self-report.	The Steinberg Depersonalization Questionnaire (SDEPQ)
				The Structured Clinical Interview for DSM–IV Dissociative Disorders (SCID-D)
				The Childhood Trauma Questionnaire (CTQ) is a 28-item self-report instrument
Simeon et al. (2009)	Psychopathology	Across disorders (DPD and PTSD) and healthy controls	The PTSD and DPD groups showed comparable levels of absorption and cognitive failures that were elevated as compared with controls. DPD group showed higher levels of alexithymia and difficulty identifying emotions, compared to PTSD and control groups.	The minority of the group showed clinically significant elevations in alexithymia (1/3 of sample for difficulty identifying feelings) Almost none of PTSD or control group participants did. Alexithymia was highly discriminatory of DPD. And predictor of DEP.
				The Dissociative Experiences Scale (DES)
				The Cambridge Depersonalization Scale (CDS)
				The Toronto Alexithymia Scale (TAS)-20
				The Tellegen Absorption Scale (TAS)
				The Childhood Trauma Questionnaire (CTQ)

Table 9*Characteristics pertaining to the participants of the reviewed studies (RQ2)*

Authors	Presenting problem	Classification	Gender	Age (years), mean (SD)
Dimitrova et al. (2021)	DID	DSM-IV	75% female	43.56 (9.34)
Fung et al. (2022)	DD	DSM-5	80.9% female	40.48 (12.59)
Mohajerin et al. (2020)	DID and co-occurring disorders (i.e., mood, anxiety and personality disorders)	DSM-5	80% female	28 (1)
Sar et al. (2016)	BPD and/or DD (DER, DPD, and DID)	DSM-IV	Total 42.6% female	20.6 (1.7)
Simeon et al. (2009)	DPD	DSM-IV	50% female	30.59 (10.28)

For research question 2 a total of 14 studies were examined. The frequency count for general study characteristics revealed that the majority (5 out of 14) of the studies were unspecified reviews, followed by literature reviews with three, two meta-analyses, two systematic reviews, a state-of-the-art review, and an invited review.

Results basic content analysis

Table 10 summarizes the coding process of the transdiagnostic factors of dissociative disorders (DD), including depersonalization-derealization disorder (DDD).

Psychological factors.

Eleven psychological transdiagnostic factors were identified in this study: 'sense of self', 'confidence in reality testing', 'control', 'cognitive failures', 'meta-consciousness', 'meta-cognition', 'alexithymia', 'hyperassociations', 'set-shifting', 'trauma' and 'stress'. Basten and Touyz (2019) state: *"Impaired sense of self seems to be a broad, transdiagnostic risk factor for developing serious, treatment-resistant mental health conditions such as ... and the dissociative disorders."* Lyssenko et al. (2018) also refers to 'sense of self', which was extracted as a transdiagnostic factor in this present study. Lyssenko et al. (2018) mentioned other psychological factors of dissociation: *"Recurrent dissociation may therefore reduce the individual's confidence in reality monitoring ability, perceived control, and sense of self, which in turn may result in a higher burden of disease."* Lynn et al. (2019) argue essentially the same as Lyssenko (2018) that dissociation affects confidence in reality testing, sense of self, perceived control, and cognitive failures, although perceived control is named attentional control. Thus, the current identified transdiagnostic factor was labeled control and the other remained confidence in reality testing. A caveat is that Lyssenko et al. (2018) use dissociation interchangeably with DD, thus it is unclear from the data whether these transdiagnostic factors relate to dissociation, DD, or both. However, this only pertains to confidence in reality monitoring ability and perceived control, as sense of self is mentioned as a transdiagnostic factor of DD by Basten and Touyz (2019).

Meta-consciousness is comprised of other transdiagnostic factors according to Lynn et al. (2019). For instance, that meta-cognition is an element of meta-consciousness, thus meta-cognition was identified as a transdiagnostic factor in the present study. Lynn et al. (2019) further argue that meta-consciousness consists of 'alexithymia' and connects it to other variables: *"Difficulties in meta-consciousness, specifically alexithymia, are related to poor interoceptive sensitivity (e.g., awareness of sensations), as well as to fantasy-proneness, hypnotic suggestibility, suggestibility, symptom over-*

reporting, and sleep problems." For instance, 'suggestibility' and 'fantasy proneness' are two other identified transdiagnostic factor in the current study. Suggestibility refers to both hypnotic and non-hypnotic suggestibility. Another currently identified transdiagnostic factor 'hyperassociations', is essential to dissociation according to Lynn et al. (2019). Hyperassociations trigger set shifting, especially in context of meta-consciousness, other stimuli, and inhibitions: *"Hyperassociations fuel set-shifting, in response to internal and external stimuli, particularly in the presence of low levels of meta-consciousness, self-regulation, and inhibition a high levels of affect."* Thus, set shifting was also extracted as a transdiagnostic factor in the present study.

The last identified psychological transdiagnostic factors are 'trauma' and 'stress'. Lyssenko et al. (2018) claim that there is a strong link between trauma and dissociation: *"Although the statistical association was found to be rather small in some studies, several studies have pointed to a strong association between trauma and dissociation."* However, proponents of the sociocognitive model questions the relationship of trauma with dissociation, especially causally: *"...the SCM remains agnostic with respect to whether trauma is in some cases directly causally related to dissociation and concedes that the role of trauma may be indirect, as we will see, via disrupted sleep, impaired emotion regulation, or increased stress levels."* In the case of childhood trauma there is also an association with dissociation according to McKinnon et al. (2016): *"... overall dissociative symptoms were associated with the presence of childhood trauma."* Hence, the transdiagnostic factor trauma refers to each of the intricacies concerning trauma.

Symptoms.

In this overarching category four transdiagnostic factor were placed: 'verbal hallucinations', 'sleep', 'depersonalization', and 'derealization'. Verbal hallucinations were extracted as a transdiagnostic factor, since Larøi et al. (2012) concluded that verbal hallucinations should be considered a dissociative phenomenon: *"Verbal hallucinations should be considered a dissociative phenomenon (and not a psychotic symptom) especially in cases of early (childhood) trauma."* This transdiagnostic factor is referred to as a dissociative phenomenon, not as psychotic symptom. In this regard verbal hallucinations are considered symptoms based on the excerpt.

Sleep was identified as a transdiagnostic factor related to symptoms. Lynn et al. (2019) sleep-wake cycle disruption can initiate dissociation: *"Poor sleep and unusual sleep-related experiences provide a non-trauma pathway to dissociation, reflecting the continuum between sleeping and waking*

life and the changeable quality of human consciousness.” Moreover, Lynn et al. (2019) describe: *“In this view, the unpredictable and disturbing infiltration of dreamlike mentation during the day lends a disquieting air of unreality to experiences, triggers anxiety and hyperassociativity, compromises meta-consciousness, and initiates episodes of depersonalization/derealization. The jarring, disruptive, and dysregulated disjuncture between waking dreamlike experiences and the reality-based demands of everyday life are likely fundamental to DDD and other dissociative disorders.”* Based on this excerpt, hyperassociativity, meta-consciousness, depersonalization, derealization, all are influenced by sleep-wake cycle disruption. Therefore, sleep wake cycle disruption is a transdiagnostic factor labeled as ‘sleep’ in the present study.

Depersonalization and derealization were identified separately as transdiagnostic factors. These were derived from McKinnon (2016) in which depersonalization/derealization are specifically mentioned as symptoms: *“Dissociative symptoms, specifically depersonalization/derealization, occur transdiagnostically, rather than representing disease-specific processes.”* Thus, sleep is the overarching identified transdiagnostic which arguably includes depersonalization and derealization. However, hyperassociativity and meta-consciousness are allotted to the overarching psychological factors category, since these are not symptoms.

Coping.

Three transdiagnostic factors were identified as coping: ‘reduce or avoid aversive emotional states’, ‘emotional dysregulation’, and ‘experiential avoidance’. Reduce or avoid aversive emotional states was described by Lyssenko et al. (2018) as a transdiagnostic factor of dissociation: *“Transdiagnostically, the experience of dissociative symptoms has been linked to ... On a cognitive-emotional level, dissociation may be a learned automatic response to reduce or avoid aversive emotional states.”* Therefore, reducing or avoidance of emotional states was placed under coping in the present study, as it is a particular *response* to dissociation.

Other identified transdiagnostic factor were named: emotional dysregulation and experiential avoidance. Mohajerin et al. (2020) described all three in a transdiagnostic perspective of DD. For example, emotion dysregulation is a transdiagnostic factor in DD and other related disorders: *“Many of the disorders that covary substantially with dissociative disorders, including borderline personality, substance abuse disorders, eating disorders, mood disorders, and psychotic spectrum disorders, are likewise marked by deficits in emotion regulation.”* Furthermore, Mohajerin et al. (2020) state that none

of these factors have been addressed for the treatment of DID: *“Unfortunately, none of the extant DID treatments have systematically addressed all three, i.e., emotional dysregulation, experiential avoidance, deficits in meta-consciousness) transdiagnostic and transtheoretical markers of dissociation.”*

Behaviors.

Two behaviors, suicide attempts and non-suicidal self-injury, were particularly present in DD compared to other disorders were described by Calati et al (2017): *“Among patients with different psychiatric diagnoses (borderline personality disorder, major depressive disorder, alcohol or drug dependence, schizophrenia, panic disorder, conversion disorder, gender dysphoria), the presence of DD was associated with higher rates of both suicide attempts and non-suicidal self-injury.”* Therefore, based on this excerpt, suicide attempts and non-suicidal self-injury were identified as transdiagnostic factors.

Miscellaneous.

The remaining three transdiagnostic factors were allotted the miscellaneous category, e.g., ‘social support’, ‘dysfunctional family dynamics’, and ‘developmental factors’. Lynn (2023) derived from previous studies various factors related to DD: *“Already, adherents of the PTM have acknowledged the value of exploring the role of genetics and biological vulnerabilities, dysfunctional family dynamics, developmental factors, and social support in dissociation.”* The identified transdiagnostic factors: ‘dysfunctional family dynamics’ and ‘social support’, based on the excerpt, were placed into the miscellaneous category, since there is limited data on what these entail. Sar (2022) does mention some developmental factors, but does not elaborate further on these factors: *“This is mainly due to the avoidance and denial of negative emotions (e.g., shame) and painful memories of a traumatic childhood. Moreover, awareness of potentially traumatic impact of life events and relatively subtle types of developmental traumatization (e.g., insecure attachment and emotional neglect) may differ between cultures.”* Therefore, developmental factors are categorized as a transdiagnostic factor under miscellaneous. Regarding protective factors, none were identified. In total, 25 transdiagnostic factors were identified in the content analysis. ‘Betrayal trauma’ was a potential transdiagnostic factor derived from the frequency count, which is combined with the other forms of trauma. The other transdiagnostic factors overlapped with those from the content analysis.

Table 9

The framework of transdiagnostic factors

Authors	Transdiagnostic factors	Categories (definitions)
		Psychological factors
(Basten & Touyz, 2019), (Lyssenko et al., 2018)	Sense of self	
(Lyssenko et al., 2018)	Confidence in reality monitoring ability	
(Lyssenko et al., 2018), (Lynn et al., 2019)	Control	
(Lynn et al., 2022), (Lynn et al., 2023), (Lyssenko et al., 2018)	Cognitive failures	
(Mohajerin et al., 2020), (Lynn et al., 2019), (Lynn et al., 2022)	Meta consciousness (<i>meta-cognition, alexithymia</i>)	
(Lynn et al., 2022), (Lynn et al., 2023)	Meta-cognition	
(Lynn et al., 2019)	Alexithymia	
(Lynn et al., 2022), (Lynn et al., 2023)	Hyperassociations	
(Lynn et al., 2022), (Lynn et al., 2023)	Set-shifting	
(Lynn et al., 2022)	Suggestibility	
(Lynn et al., 2022)	Fantasy proneness	
(Lynn et al., 2022), (Lynn et al., 2023), (Lyssenko et al., 2018), (McKinnon et al., 2016)	Trauma	
(Lynn et al., 2022), (McKinnon et al., 2016), (Lyssenko et al., 2018)	Stress	
		Symptoms
(Larøi et al., 2012), (McKinnon et al., 2016)	Verbal hallucinations	
(Lynn et al., 2019), (Lynn et al., 2022), (Lynn et al., 2023), (van Heugten-van der Kloet, 2012)	Sleep (<i>hyperassociations, meta-consciousness, depersonalization, derealization</i>)	
(McKinnon et al., 2016)	Depersonalization	
(McKinnon et al., 2016)	Derealization	
		Coping
(Lynn et al., 2023), (Lyssenko et al., 2018)	Reduce or avoid negative emotional states	
(Mohajerin et al., 2020), (Lynn et al., 2022), (Lynn et al., 2023)	Emotional dysregulation (<i>impulsivity & alexithymia</i>)	
(Mohajerin et al., 2020)	Experiential avoidance	
		Behaviors
(Calati et al., 2017)	Suicide attempts	
(Calati et al., 2017)	Non-suicidal self-injury	
		Miscellaneous
(Lynn et al., 2023), (Sar, 2022)	Developmental factors	
(Lynn et al., 2023)	Social support	
(Lynn et al., 2023)	Dysfunctional family support	

Discussion

This scoping review provides an overview of the effectiveness of eHealth interventions for DD, specifically DDD. It revealed that there are no studies which directly examine the effectiveness of eHealth interventions for DD. However, only one study was found that inspected DDD as secondary outcome, in which insignificant reductions of DDD by the eHealth intervention were found, albeit with moderate effect sizes. Second, it identified various transdiagnostic factors of DD, with a focus on DDD, which could be targeted via eHealth. In total, 26 were identified. The majority of 11 transdiagnostic factors are psychological factors. Four transdiagnostic factors were related to symptoms, two to behaviors, three to coping, and the remaining three in miscellaneous, whereas no protective factors were identified. Whether these transdiagnostic factors can be targeted for treatment of DD via eHealth interventions cannot be derived from current findings.

Main findings

The findings revealed there is no direct research on effectiveness of eHealth intervention for DD, although DDD was examined as secondary outcome in one study. Based on lack of studies on the topic, one could presume that eHealth is not yet considered as an treatment modality for DD. Indeed, the current findings are in accordance with the notion that DD are under-researched, especially in the context of traditional treatment (Knappik, 2022; Krishna et al., 2020; Sar & Ross, 2022).

The main explanation for the lack of eHealth research for the treatment of DD is that these eHealth interventions typically incorporate elements from traditional face to face therapy (f2f). For instance, the majority of eHealth interventions include a modified version of cognitive behavioral therapy (CBT) as therapy form, although other therapy forms have also been used depending on the disorder being treated (Andersson & Titov, 2014; Erbe, 2017; Xie et al., 2022). For DD, treatment via cognitive approaches seem most promising (Subramanyam et al., 2020). However, there are a lack of studies examining CBT for DD. In the case of DDD, there is only a single study related to treatment with CBT (Hunter et al, 2005). Therefore, it would be difficult to use eHealth interventions for the treatment of DD when there is currently lack of evidence for therapies without an eHealth component.

Ideally, what the transdiagnostic factors are would be described considering the findings of the effectiveness of eHealth interventions. However, this is not possible with only one study examining the effectiveness of eHealth interventions in DD. Therefore, the main findings regarding transdiagnostic factors are highlighted in other mental disorders, which target the same transdiagnostic factor for

treatment. For instance, in psychotic spectrum disorders, anxiety disorders, post-traumatic stress disorder (PTSD), and borderline personality disorders (BPD), since these mental disorders have arguably the most commonalities with DD (Černis et al., 2021; Krause, 2022). The current findings regarding the identified transdiagnostic factor verbal hallucinations support this claim, since it can be considered primarily a dissociative phenomenon, while verbal hallucinations also being a core symptom in psychotic spectrum disorders (Moskowitz & Corstens, 2008; Moskowitz et al., 2017).

The current results of the transdiagnostic factors suggest there is a substantial total amount of 26, which could be targeted for treatment of DD, including DDD. Four findings pertaining to transdiagnostic factors are highlighted: psychological factors, coping, symptoms, and behaviors. First, the majority of 11 are psychological transdiagnostic factors, although some could arguably be placed in the symptom or coping category. The findings indicate that meta-consciousness consists of alexithymia and meta-cognition, and that meta-consciousness is related to various other transdiagnostic factors.

Prior research shows that interventions targeting meta-cognition are limited, especially regarding eHealth (Fergus & Hiraoka, 2018; Phillips et al., 2018). Traditional meta-cognitive therapy seems to be at least as effective as other psychological interventions in adult patients with anxiety disorders, schizophrenia, and other mental disorders (Phillip et al., 2018). However, it is unclear whether this translates to eHealth. To my knowledge, there is only one study which showed improvement in patients with anxiety disorders, but the study was a pilot and the only study examining an aspect of meta-cognition, e.g., attention (Fergus & Hiraoka, 2018). Thus, currently it is unclear whether eHealth can target the transdiagnostic factor meta-cognition in other mental disorders.

Previous studies examining alexithymia indicate that there are not many empirically validated eHealth interventions targeting alexithymia. However, there is the biosensor smartphone app 'Sense-IT' that targets emotional awareness in patients with BPD by measuring heart rate variability in combination with movement via a smartwatch to better recognize emotional arousal. It is one of the first and few to be prepared for clinical effectiveness, which suggests that mobile eHealth can target alexithymia in BPD (Derks, 2019, 2022). Taken together, there only exist a few eHealth interventions targeting meta-consciousness, including meta-cognition and alexithymia.

Second, current findings suggest that emotional dysregulation consists of impulsivity and alexithymia. Emotional dysregulation can be targeted with eHealth, e.g., mobile apps, for instance in people with anxiety and in patients with psychotic spectrum disorders (Broglia et al., 2019; Weintraub et al., 2022). Moreover, a digital journal intervention, adjunct to dialectical behavioral therapy (DBT),

shows improvement in DTB skills related to BPD, e.g., improvement in quality of life, borderline severity, and other improvements (Laursen et al, 2021). Another study examining the feasibility of mobile apps in patients with BPD revealed that overall satisfaction with the app was high (Frías et al., 2020). Hence, the transdiagnostic factor emotional dysregulation can be targeted via eHealth in anxiety and BPD.

Third, sleep was identified as transdiagnostic factor. eHealth interventions that target sleep can potentially affect other transdiagnostic factors, as the findings show that sleep influences multiple other transdiagnostic factors. A systematic review and meta-analysis of randomized control trials (RCT) indicate that eHealth interventions, e.g., website, computer, smartphone, telephone, or mixed mode, can largely reduce insomnia and moderately improve sleep quality (Deng et al., 2023). In cancer patients, associated mental complaints, e.g., anxiety and depression, are reduced by an eHealth intervention targeting sleep related to insomnia. Therefore, eHealth interventions can improve symptoms related to sleep disruption and perhaps associated mental health complaints in.

Last, the findings indicate that two only transdiagnostic factors are related to behaviors: suicidal attempts and non-suicidal self-injurious behavior. A mobile app for inpatients designed to reduce suicide attempts demonstrates that it is acceptable and feasibility. Additionally, suicide attempts among participants were reduced by half after discharge (Kennard et al., 2018). Mobile apps in another study showed mixed results in reducing suicide risk in patients diagnosed with adjustment disorder (O'Toole et al., 2019). Patients with the app showed smaller decreases in suicide risk compared to controls, due to smaller exposure to the treatment, according to the authors. Last, an RCT examining mobile apps reducing suicide attempts in adolescents showed that the intervention was acceptable and usable by clients, but effects on self-report of suicide risk was poorer in the app group compared to the control group (Beard et al., 2021). Therefore, it is unclear whether suicidal attempts and non-suicidal self-injurious behavior can be targeted via eHealth.

In sum, the current findings suggest that combining eHealth and transdiagnostic factors of DD might be a difficult task to undertake. There do not exist findings on eHealth, therefore one can only examine other mental disorders in which the same transdiagnostic factors are targeted. The majority of eHealth interventions indicate that these transdiagnostic factors can be targeted to varying degrees in mental disorders other than DD. However, it is unclear whether these findings can be extrapolated to DD.

Strengths and limitations

This scoping review has several strengths and limitations. The main strength of this scoping review is that the literature was scoped widely by including a gray literature search with a critical appraisal of the gray literature, although in the end no gray sources were eligible. Additionally, forward and backward snowballing were applied to find additional relevant sources. The first limitation is related to reliability. Due to pragmatic reasons of time and accessibility of reviewers, no additional reviewers were included in the study. This led to obstacles during the screening and selection process. For example, the data extraction form was not piloted, which led to some refinements and additions to the data extraction forms. Ideally, a pilot test would prevent this problem (Büchter et al, 2020). Similarly, although forward and backward snowballing is considered a strength of the scoping review, it was solely done by the author of this thesis, which induces a selection bias of potentially valuable sources (Drucker et al., 2016). Second, the exclusion criteria were strict for dissociative disorders, which excluded other dissociative subtypes, such as the dissociative subtype of post-traumatic stress disorder (PTSD). In addition, broader dissociative symptomology was excluded for the transdiagnostic factors, except for the basic content analysis, which led to fewer eligible included studies. The last limitation is that no firm distinctions can be made between dissociative disorders on the basis of the five included studies, which is why findings on transdiagnostic factors arguably cannot be extrapolated to all dissociative symptomology and dissociative disorders.

Recommendations

This scoping review can be seen as the first to identify the non-existence of direct research examining the effective eHealth interventions for DD, specifically DDD. It is also the first to identify all transdiagnostic factors of DD, specifically DDD, in context of treatment via eHealth. The main limitation of this scoping review is that a concrete distinction between DD and dissociation cannot be made. Future studies should therefore use broader inclusion/exclusion criteria, including dissociation/dissociative symptomology. In this way, it can be assessed whether the current non-existent findings on treatment of DD, can be extrapolated to dissociation. Conversely, whether the findings on transdiagnostic factors of DD can be extrapolated to dissociation, since now only studies with diagnosed DD were included during the frequency count of the data. Moreover, the current scoping review was conducted solely by the author of this present thesis. Further studies should therefore build upon current findings by enhancing reliability, since studies examining transdiagnostic

factors often are methodologically weak (Fusar-Poli et al., 2019). For instance, by adding reviewers and by assessing inter-rater reliability during the basic content analysis, which measures the extent to which there is agreement among data collectors (McHugh, 2012). Most importantly, should be incorporating reviewers during the whole scoping review process to enhance reliability.

Based on the current findings further recommendations can be made. The findings revealed that no studies examine treatment of DD via eHealth interventions. Additionally, the findings indicate that transdiagnostic factors cannot be targeted via eHealth for DD, as eHealth research examining DD does not exist. The findings imply that exploratory research should first be conducted before anything else to seek which research questions and hypotheses can be further explored in the context of eHealth and dissociative disorders (Singh, 2021). For example, addressing why there is no research examining DD via eHealth interventions. As a result, combining eHealth interventions to target transdiagnostic factors of DD for treatment is currently not warranted and possible based on present findings.

The findings revealed many transdiagnostic factors to be targeted for treatments. Further studies should therefore explore these findings more in depth. It is currently not known to what extent these transdiagnostic factors can be targeted for treatment, especially concerning eHealth. Furthermore, it is unknown to what extent each individual transdiagnostic factor is supported for each DD. To my knowledge, the study by Lynn et al. (2022) was the first to analyze the transdiagnostic factors of DD by an annual review design. However, this is not a systematic approach. Therefore, current findings support conducting a systematic review in which each individual transdiagnostic factor is further analyzed and critically appraised.

Conclusion

This scoping review has explored topics not previously explored in detail. For the treatment of DD, specifically DDD, eHealth interventions seemed initially to be a potential treatment modality. However, no studies examine eHealth intervention for DD, specifically DDD, therefore it is currently unknown whether eHealth can indeed be an effective for treatment modality for DD. Many transdiagnostic factors were identified, potentially targetable for treatment of DD with eHealth. This scoping review was the first to try to combine eHealth and transdiagnostic factors of DD, since there is a paucity of evidence-based treatments for DD. However, more research is needed to better understand how eHealth interventions can be effective at all for DD, and consequently whether the transdiagnostic factors can be targeted for treatment via eHealth interventions for DD.

References

- Alderliefste, G. J. (2016). DPS en HPPD: signalering, diagnostiek en behandeling van persistente waarnemingsstoornissen na partydrugs. *Verslaving*, *12*, 172–184.
<https://doi.org/10.1007/s12501-016-0074-x>
- Al-Qahtani, H. H. A.-H., & Al-Juda, M. Q. (2018). Development of Social Skills with an Intellectual Disability Using Mobile Application. *American Journal of Educational Research*, *6*(1), Article 1. <https://doi.org/10.12691/education-6-1-9>
- American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders* (5th ed.).
<https://doi.org/10.1176/appi.books.9780890425596>
- American Psychological Association. (2019). *Publication manual of the American Psychological Association* (7th ed.). <https://doi.org/10.1037/0000165-000>
- Andersson, G., & Titov, N. (2014). Advantages and limitations of internet-based interventions for common mental disorders. *World Psychiatry*, *13*(1), 4–11. <https://doi.org/10.1002/wps.20083>
- Arora, T., Alhelali, E., & Grey, I. E. (2020). Poor sleep efficiency and daytime napping are risk factors of depersonalization disorder in female university students. *Neurobiology of Sleep and Circadian Rhythms*, *9*, 100059. <https://doi.org/10.1016/j.nbscr.2020.100059>
- Baker, D., Hunter, E., Lawrence, E., Medford, N., Patel, M. X., Senior, C., Sierra, M., Lambert, M., Phillips, M. L., & David, A. S. (2003). Depersonalisation disorder: clinical features of 204 cases. *British Journal of Psychiatry*, *182*(5), 428–433. <https://doi.org/10.1192/bjp.182.5.428>
- Bashshur, R. L., Howell, J. D., Krupinski, E. A., Harms, K. M., Bashshur, N., & Doarn, C. R. (2016). The Empirical Foundations of Telemedicine Interventions in Primary Care. *Telemedicine Journal and E-health*, *22*(5), 342–375. <https://doi.org/10.1089/tmj.2016.0045>
- Basten, C., & Touyz, S. (2019). Sense of Self: Its Place in Personality Disturbance, Psychopathology, and Normal Experience. *Review of General Psychology*, *24*(2), 159–171. <https://doi.org/10.1177/1089268019880884>
- Beard, C., Ramadurai, R., McHugh, R. K., Pollak, J. P., & Björgvinsson, T. (2021). HabitWorks: Development of a CBM-I smartphone app to augment and extend acute treatment. *Behavior Therapy*, *52*(2), 365–378. <https://doi.org/10.1016/j.beth.2020.04.013>

- Brand, B. L., Classen, C., McNary, S., & Zaveri, P. (2009). A review of Dissociative Disorders Treatment Studies. *Journal of Nervous and Mental Disease*, 197(9), 646–654.
<https://doi.org/10.1097/nmd.0b013e3181b3afaa>
- Broglia, E., Millings, A., & Barkham, M. (2019). Counseling with guided use of a Mobile Well-Being app for students experiencing anxiety or depression: Clinical outcomes of a feasibility trial embedded in a student counseling service. *JMIR Mhealth and Uhealth*, 7(8), e14318. <https://doi.org/10.2196/14318>
- Büchter, R. B., Weise, A., & Pieper, D. (2020). Development, testing and use of data extraction forms in systematic reviews: a review of methodological guidance. *BMC Medical Research Methodology*, 20(1). <https://doi.org/10.1186/s12874-020-01143-3>
- Calati, R., Bensassi, I., & Courtet, P. (2017). The link between dissociation and both suicide attempts and non-suicidal self-injury: Meta-analyses. *Psychiatry Research-neuroimaging*, 251, 103–114. <https://doi.org/10.1016/j.psychres.2017.01.035>
- Cohen, J. (1988). Set Correlation and Contingency Tables. *Applied Psychological Measurement*, 12(4), 425–434. <https://doi.org/10.1177/014662168801200410>
- Covidence. (2023). [systematic review software]. <https://support.covidence.org/help/how-can-i-cite-covidence>
- Černis, E., Evans, R. J., Ehlers, A., & Freeman, D. (2021). Dissociation in relation to other mental health conditions: An exploration using network analysis. *Journal of Psychiatric Research*, 136, 460–467. <https://doi.org/10.1016/j.jpsychires.2020.08.023>
- Dalgleish, T., Black, M., Johnston, D., & Bevan, A. (2020). Transdiagnostic Approaches to Mental Health Problems: Current status and future directions. *Journal of Consulting and Clinical Psychology*, 88(3), 179–195. <https://doi.org/10.1037/ccp0000482>
- Deng, W., Van Der Kleij, R., Shen, H., Wei, J., Brakema, E. A., Guldemond, N., Song, X., Li, X., Van Tol, M., Aleman, A., & Chavannes, N. H. (2023). EHealth-Based Psychosocial Interventions for Adults with insomnia: systematic review and meta-analysis of randomized controlled trials. *Journal of Medical Internet Research*, 25, e39250. <https://doi.org/10.2196/39250>
- Derks, Y. P., Klaassen, R., Westerhof, G. J., Bohlmeijer, E. T., & Noordzij, M. L. (2019). Development of an Ambulatory Biofeedback App to Enhance Emotional Awareness in Patients with Borderline Personality Disorder: Multicycle Usability Testing Study. *Jmir Mhealth and Uhealth*, 7(10), e13479. <https://doi.org/10.2196/13479>

- Derks, Y. P. M. J. (2022). *Alexithymia in Borderline Personality Pathology: from theory to a biosensor application*. [PhD Thesis - Research external, graduation UT, University of Twente]. University of Twente. <https://doi.org/10.3990/1.9789464217896>
- Dimitrova, L., Dean, S. L., Schlumpf, Y. R., Vissia, E. M., Nijenhuis, E. R. S., Chatzi, V., Jäncke, L., Veltman, D. J., Chalavi, S., & Reinders, A. A. T. S. (2021). A neurostructural biomarker of dissociative amnesia: a hippocampal study in dissociative identity disorder. *Psychological Medicine*, 53(3), 805–813. <https://doi.org/10.1017/s0033291721002154>
- Drucker, A. M., Fleming, P., & Chan, A. (2016). Research Techniques Made Simple: Assessing Risk of Bias in Systematic Reviews. *Journal of Investigative Dermatology*, 136(11), e109–e114. <https://doi.org/10.1016/j.jid.2016.08.021>
- Ehret, A. M., & Berking, M. (2013). From DSM-IV to DSM-5: What Has Changed in the New Edition? *Verhaltenstherapie*, 23(4), 258–266. <https://doi.org/10.1159/000356537>
- Ellickson-Larew, S., Stasik-O'Brien, S. M., Stanton, K., & Watson, D. (2020). Dissociation as a multidimensional transdiagnostic symptom. *Psychology of Consciousness: Theory, Research, and Practice*, 7(2), 126–150. <https://doi.org/10.1037/cns0000218>
- Ellis, L. A., Meulenbroeks, I., Churruca, K., Pomare, C., Hatem, S., Harrison, R., Zurynski, Y., & Braithwaite, J. (2021). The Application of e-Mental Health in Response to COVID-19: Scoping Review and Bibliometric Analysis. *JMIR mental health*, 8(12), e32948. <https://doi.org/10.2196/32948>
- Erbe, D., Eichert, H., Riper, H., & Ebert, D. S. (2017). Blending Face-to-Face and Internet-Based Interventions for the Treatment of Mental Disorders in Adults: Systematic Review. *Journal of Medical Internet Research*, 19(9), e306. <https://doi.org/10.2196/jmir.6588>
- Fergus, T. A., & Hiraoka, R. (2018). A pilot study of a 4-Week eHealth-Based protocol of the Attention Training Technique component of metacognitive therapy among patients with anxiety disorders. *Journal of Cognitive Psychotherapy*, 32(2), 140–152. <https://doi.org/10.1891/0889-8391.32.2.140>
- Flückiger, R., Schmidt, S. J., Michel, C., Kindler, J., & Kaess, M. (2021). Introducing a Group Therapy Program (PLAN D) for Young Outpatients with Derealization and Depersonalization: A Pilot Study. *Psychopathology*, 1–7. <https://doi.org/10.1159/000520008>
- Frías, Á., Palma, C., Salvador, A. P., Aluco, E., Navarro, S., Farriols, N., Aliaga, F., Solves, L., & Antón, M. (2020). B-RIGHT: usability and satisfaction with a mobile app for self-managing emotional crises

- in patients with borderline personality disorder. *Australasian Psychiatry*, 29(3), 294–298.
<https://doi.org/10.1177/1039856220924321>
- Fung, H. W., Wong, E. N. M., Lam, S., Chien, W. T., Hung, S. L., & Ross, C. A. (2022). The prevalence of dissociative symptoms and disorders: Findings from a sample of community health service users in Hong Kong. *Asian Journal of Psychiatry*, 80, 103351.
<https://doi.org/10.1016/j.ajp.2022.103351>
- Fusar-Poli, P., Solmi, M., Brondino, N., Davies, C., Chae, C., Politi, P., Borgwardt, S., Lawrie, S. M., Parnas, J., & McGuire, P. (2019). *Transdiagnostic Psychiatry: A Systematic Review*. *World Psychiatry*, 18(2), 192–207. <https://doi.org/10.1002/wps.20631>
- GGZ Standaarden. (2020). *Zorgstandaard: Dissociatieve stoornissen*.
<https://www.ggzstandaarden.nl/zorgstandaarden/dissociatieve-stoornissen/introductie>
- Granholm, E., Ben-Zeev, D., Link, P. C., Bradshaw, K. R., & Holden, J. (2012). Mobile Assessment and Treatment for Schizophrenia (MATS): A Pilot Trial of An Interactive Text-Messaging Intervention for Medication Adherence, Socialization, and Auditory Hallucinations. *Schizophrenia Bulletin*, 38(3), 414–425. <https://doi.org/10.1093/schbul/sbr155>
- Grant, M. B., & Booth, A. (2009). A typology of reviews: an analysis of 14 review types and associated methodologies. *Health Information and Libraries Journal*, 26(2), 91–108.
<https://doi.org/10.1111/j.1471-1842.2009.00848.x>
- Hallgren, M., Helgadóttir, B., Herring, M. P., Zeebari, Z., Lindefors, N., Kaldo, V., Öjehagen, A., & Forsell, Y. (2016). Exercise and internet-based cognitive–behavioral therapy for depression: multicentre randomised controlled trial with 12-month follow-up. *British Journal of Psychiatry*, 209(5), 414–420. <https://doi.org/10.1192/bjp.bp.115.177576>
- Hedman, E., Axelsson, E., Andersson, E., Lekander, M., & Ljótsson, B. (2016). Exposure-based cognitive–behavioural therapy via the internet and as bibliotherapy for somatic symptom disorder and illness anxiety disorder: Randomised controlled trial. *The British Journal of Psychiatry*, 209(5), 407–413. [doi:10.1192/bjp.bp.116.181396](https://doi.org/10.1192/bjp.bp.116.181396)
- Hoebner, C. M., De Kleine, R. H. J., Molendijk, M. L., Schoorl, M., Oprel, D., Mouthaan, J., Van Der Does, A., & Van Minnen, A. (2020). Impact of dissociation on the effectiveness of psychotherapy for post-traumatic stress disorder: meta-analysis. *British Journal of Psychiatry Open*, 6(3). <https://doi.org/10.1192/bjo.2020.30>

- Hoeschel, K., Guba, K., Kleindienst, N., Limberger, M. F., Schmahl, C., & Bohus, M. (2008). Oligodipsia and dissociative experiences in borderline personality disorder. *Acta Psychiatrica Scandinavica*, 117(5), 390–393. <https://doi.org/10.1111/j.1600-0447.2008.01167.x>
- Hunter, E. C. M., Baker, D., Phillips, M. L., Sierra, M., & David, A. S. (2005). Cognitive-behaviour therapy for depersonalisation disorder: an open study. *Behaviour Research and Therapy*, 43(9), 1121–1130. <https://doi.org/10.1016/j.brat.2004.08.003>
- Hunter, E. C. M., Charlton, J., & David, A. S. (2017). Depersonalisation and derealisation: Assessment and management. *BMJ*, 356, j745. <https://doi.org/10.1136/bmj.j745>
- Hunter, E. C. M., Phillips, M. L., Chalder, T., Sierra, M., & David, A. S. (2003). Depersonalisation disorder: A cognitive-behavioural conceptualisation. *Behaviour Research and Therapy*, 41(12), 1451–1467. [https://doi.org/10.1016/S0005-7967\(03\)00066-4](https://doi.org/10.1016/S0005-7967(03)00066-4)
- Indelli, P., Landeira-Fernandez, J., & Mograbi, D. C. (2018). In search of connection: towards a transdiagnostic view of dissociative phenomena through Research Domain Criteria (RDoC) framework. *Psicologia clínica*, 30(3), 509–540. <https://doi.org/10.33208/pc1980-5438v0030n03a06>
- Kennard, B. D., Goldstein, T. R., Foxwell, A. A., McMakin, D. L., Wolfe, K. L., Biernesser, C., Moorehead, A., Douaihy, A., Zullo, L., Wentroble, E., Owen, V. J., Zelazny, J., Iyengar, S., Porta, G., & Brent, D. A. (2018). As safe as Possible (ASAP): a brief App-Supported inpatient intervention to prevent postdischarge suicidal behavior in hospitalized, suicidal adolescents. *American Journal of Psychiatry*, 175(9), 864–872. <https://doi.org/10.1176/appi.ajp.2018.17101151>
- Knappik, F. (2022). No need for mineness: Depersonalization/Derealization Disorder and mental state types. *Phenomenology and the Cognitive Sciences*. <https://doi.org/10.1007/s11097-022-09872-0>
- Krause-Utz, A. (2022). Dissociation, trauma, and borderline personality disorder. *Borderline Personality Disorder and Emotion Dysregulation*, 9(1). <https://doi.org/10.1186/s40479-022-00184-y>
- Krishna, B. C., Kethawath, S. M., Pingali, S., & Umashankar, M. (2020). Depersonalization - derealization syndrome: A case report. *Telangana Journal of Psychiatry*, 6(2), 185–186. <https://doi.org/10.18231/j.tjp.2020.038>
- Lanius, R. A., Boyd, J. E., McKinnon, M. C., Nicholson, A. G., Frewen, P. A., Vermetten, E., Jetly, R., & Spiegel, D. (2018). A Review of the Neurobiological Basis of Trauma-Related Dissociation and Its Relation to Cannabinoid- and Opioid-Mediated Stress Response: a Transdiagnostic, Translational Approach. *Current Psychiatry Reports*, 20(12). <https://doi.org/10.1007/s11920-018-0983-y>

- Larøi, F., Sommer, I. E. C., Blom, J. D., Fernyhough, C., Weintraub, D., Hugdahl, K., Johns, L., McCarthy-Jones, S., Preti, A., Raballo, A., Slotema, C. W., Stephane, M., & Waters, F. (2012). The Characteristic Features of Auditory Verbal Hallucinations in Clinical and Nonclinical Groups: State-of-the-Art Overview and Future Directions. *Schizophrenia Bulletin*, *38*(4), 724–733. <https://doi.org/10.1093/schbul/sbs061>
- Laursen, S. L., Helweg-Jørgensen, S., Langergaard, A., Søndergaard, J., Sørensen, S. S., Mathiasen, K., Lichtenstein, M. B., & Ehlers, L. H. (2021). Mobile diary App versus Paper-Based diary cards for patients with Borderline Personality Disorder: Economic evaluation. *Journal of Medical Internet Research*, *23*(11), e28874. <https://doi.org/10.2196/28874>
- Lynn, S. J., Maxwell, R. M., Merckelbach, H., Lilienfeld, S. O., Van Heugten-Van Der Kloet, D., & Miskovic, V. (2019). Dissociation and its disorders: Competing models, future directions, and a way forward. *Clinical Psychology Review*, *73*, 101755. <https://doi.org/10.1016/j.cpr.2019.101755>
- Lynn, S. J., McNally, R. J., & Loftus, E. F. (2023). The Memory Wars Then and Now: The Contributions of Scott O. Lilienfeld. *Clinical psychological science*, *2*(16), 216770262211330. <https://doi.org/10.1177/21677026221133034>
- Lynn, S. J., Polizzi, C., Merckelbach, H., Chiu, C.-D., Maxwell, R., van Heugten, D., & Lilienfeld, S. O. (2022). Dissociation and dissociative disorders reconsidered: Beyond sociocognitive and trauma models toward a transtheoretical framework. *Annual Review of Clinical Psychology*, *18*(1), 259–289. <https://doi.org/10.1146/annurev-clinpsy-081219-102424>
- Lyssenko, L., Schmahl, C., Bockhacker, L., Vonderlin, R., Bohus, M., & Kleindienst, N. (2018). Dissociation in Psychiatric Disorders: A Meta-Analysis of Studies Using the Dissociative Experiences Scale. *American Journal of Psychiatry*, *175*(1), 37–46. <https://doi.org/10.1176/appi.ajp.2017.17010025>
- Marzano, L., Bardill, A., Fields, B., Herd, K., Veale, D., Grey, N., & Moran, P. (2015). The application of mHealth to mental health: Opportunities and challenges. *The Lancet. Psychiatry*, *2*(10), 942–948. [https://doi.org/10.1016/S2215-0366\(15\)00268-0](https://doi.org/10.1016/S2215-0366(15)00268-0)
- Massoudi, B., Holvast, F., Bockting, C. L. H., Burger, H., & Blanker, M. H. (2019). The effectiveness and cost-effectiveness of e-health interventions for depression and anxiety in primary care: A systematic review and meta-analysis. *Journal of Affective Disorders*, *245*, 728–743. <https://doi.org/10.1016/j.jad.2018.11.050>

- McHugh, M. L. (2012). Interrater reliability: the kappa statistic. *Biochemia Medica*, 276–282.
<https://doi.org/10.11613/bm.2012.031>
- McKinnon, M. C., Boyd, J. E., Frewen, P. A., Lanius, U. F., Jetly, R., Richardson, J. D., & Lanius, R. A. (2016). A review of the relation between dissociation, memory, executive functioning and social cognition in military members and civilians with neuropsychiatric conditions. *Neuropsychologia*, 90, 210–234. <https://doi.org/10.1016/j.neuropsychologia.2016.07.017>
- Michal, M., Adler, J., Wiltink, J., Reiner, I., Tschan, R., Wölfling, K., Weimert, S., Tuin, I., Subic-Wrana, C., Beutel, M. E., & Zwerenz, R. (2016). A case series of 223 patients with depersonalization-derealization syndrome. *BMC Psychiatry*, 16(1). <https://doi.org/10.1186/s12888-016-0908-4>
- Michal, M., Glaesmer, H., Zwerenz, R., Knebel, A., Wiltink, J., Brähler, E., & Beutel, M. E. (2011). Base rates for depersonalization according to the 2-item version of the Cambridge Depersonalization Scale (CDS-2) and its associations with depression/anxiety in the general population. *Journal of Affective Disorders*, 128(1-2), 106-111. <https://doi.org/10.1016/j.jad.2010.06.033>
- Michelson, L., June, K., Vives, A., Testa, S., & Marchione, N. (1998). The role of trauma and dissociation in cognitive-behavioral psychotherapy outcome and maintenance for panic disorder with agoraphobia. *Behaviour Research and Therapy*, 36(11), 1011–1050. [https://doi.org/10.1016/s0005-7967\(98\)00073-4](https://doi.org/10.1016/s0005-7967(98)00073-4)
- Mohajerin, B., Lynn, S. J., Bakhtiyari, M., & Dolatshah, B. (2020). Evaluating the Unified Protocol in the Treatment of Dissociative Identify Disorder. *Cognitive and Behavioral Practice*, 27(3), 270–289. <https://doi.org/10.1016/j.cbpra.2019.07.012>
- Mohan, S., & Pingali, S. (2020). Depersonalization - derealization syndrome: A case report. *Telangana Journal of Psychiatry*, 6(2):185-186. <https://doi.org/10.18231/j.tjp.2020.038>
- Moskowitz, A., & Corstens, D. (2008). Auditory hallucinations: psychotic symptom or dissociative experience? *Journal Of Aggression, Maltreatment & Trauma*, 6(2–3), 35–63. https://doi.org/10.1300/j513v06n02_04
- Moskowitz, A., Mosquera, D., & Longden, E. (2017). Auditory verbal hallucinations and the differential diagnosis of schizophrenia and dissociative disorders: Historical, empirical and clinical perspectives. *European Journal of Trauma & Dissociation*, 1(1), 37–46. <https://doi.org/10.1016/j.ejtd.2017.01.003>

- Munn, Z., Peters, M. D. J., Stern, C., Tufanaru, C., McArthur, A., & Aromataris, E. (2018). Systematic review or scoping review? Guidance for authors when choosing between a systematic or scoping review approach. *BMC Medical Research Methodology*, *18*(1). <https://doi.org/10.1186/s12874-018-0611-x>
- Naslund, J. A., Marsch, L. A., McHugo, G. J., & Bartels, S. J. (2015). Emerging mHealth and eHealth interventions for serious mental illness: a review of the literature. *Journal of Mental Health*, *24*(5), 321–332. <https://doi.org/10.3109/09638237.2015.1019054>
- Nijenhuis, E. R. S. (2001). Somatoform Dissociation. *Journal of trauma & dissociation*, *1*(4), 7–32. https://doi.org/10.1300/j229v01n04_02
- O'Toole, M. S., Arendt, M., & Pedersen, C. (2019). Testing an App-Assisted Treatment for Suicide Prevention in a randomized controlled Trial: Effects on suicide risk and Depression. *Behavior Therapy*, *50*(2), 421–429. <https://doi.org/10.1016/j.beth.2018.07.007>
- Ouwensloot, G., Derksen, J., & Glas, G. (2020). Reintroducing Consciousness in Psychopathology: Review of the Literature and Conceptual Framework. *Frontiers in Psychology*, *11*. <https://doi.org/10.3389/fpsyg.2020.586284>
- Paez, A. (2018). Gray literature: An important resource in systematic reviews. *Journal of Evidence-Based Medicine*, *10*(3), 233–240. <https://doi.org/10.1111/jebm.12266>
- Peters, M. D. J., Godfrey, C. M., Khalil, H., McInerney, P., Parker, D., & Soares, C. B. (2015). Guidance for conducting systematic scoping reviews. *International Journal of Evidence-Based Healthcare*, *13*(3), 141–146. <https://doi.org/10.1097/XEB.000000000000050>
- Philippe, T. J., Sikder, N., Jackson, A., Koblanski, M. E., Liow, E., Pilarinos, A., & Vasarhelyi, K. (2022). Digital Health Interventions for Delivery of Mental Health Care: Systematic and Comprehensive Meta-Review. *JMIR mental health*, *9*(5), e35159. <https://doi.org/10.2196/35159>
- Pollock, D., Peters, M. D. J., Khalil, H., McInerney, P., Alexander, L., Tricco, A. C., Evans, C., De Moraes, É. B., Godfrey, C., Pieper, D., Saran, A., Stern, C., & Munn, Z. (2023). Recommendations for the extraction, analysis, and presentation of results in scoping reviews. *JBI evidence synthesis*, *21*(3), 520–532. <https://doi.org/10.11124/jbies-22-00123>
- Quigley, L., Warren, J. T., & Townsend, C. (2022). Features of depersonalization: An examination and expansion of the cognitive-behavioral model. *Psychology of Consciousness: Theory, Research, and Practice*. Advance online publication. <https://doi.org/10.1037/cns0000336>

- Rădulescu, I. R., Ciubara, A. B., Moraru, C., Burlea, S. L., & Ciubara, A. (2020). Evaluating the Impact of Dissociation in Psychiatric Disorders. *Broad Research in Artificial Intelligence Neuroscience*, 11, 163-174. <https://doi.org/10.18662/brain/11.3sup1/132>
- Rajkumar, R. P. (2022). The Molecular Genetics of Dissociative Symptomatology: A Transdiagnostic Literature Review. *Genes*, 13(5), 843. <https://doi.org/10.3390/genes13050843>
- Roydeva, M. I., & Reinders, A. A. T. S. (2021). Biomarkers of Pathological Dissociation: A Systematic Review. *Neuroscience & Biobehavioral Reviews*, 123, 120–202. <https://doi.org/10.1016/j.neubiorev.2020.11.019>
- Rufer, M., Held, D., Cremer, J., Fricke, S., Moritz, S., Peter, H., & Hand, I. (2006). Dissociation as a Predictor of Cognitive Behavior Therapy Outcome in Patients with Obsessive-Compulsive Disorder. *Psychotherapy and Psychosomatics*, 75(1), 40–46. <https://doi.org/10.1159/000089225>
- Sar, V. (2011). Epidemiology of Dissociative Disorders: An Overview. *Epidemiology Research International*, 2011, 1–8. <https://doi.org/10.1155/2011/404538>
- Sar, V. (2022). Dissociation Across Cultures: A Transdiagnostic Guide for Clinical Assessment and Management. *Alpha Psychiatry*, 23(3), 95–103. <https://doi.org/10.5152/alphapsychiatry.2022.21556>
- Sar, V., Alioğlu, F., & Akyüz, G. (2016). Depersonalization and derealization in self-report and clinical interview: The spectrum of borderline personality disorder, dissociative disorders, and healthy controls. *Journal of Trauma & Dissociation*, 18(4), 490–506. <https://doi.org/10.1080/15299732.2016.1240737>
- Sar, V., & Ross, C. J. D. (2006). Dissociative Disorders as a Confounding Factor in Psychiatric Research. *Psychiatric Clinics of North America*, 29(1), 129–144. <https://doi.org/10.1016/j.psc.2005.10.008>
- Sar, V., & Ross, C. A. (2022). A Research Agenda for the Dissociative Disorders Field. In Routledge eBooks (pp. 793–810). <https://doi.org/10.4324/9781003057314-60>
- Seppälä, J., De Vita, I., Jämsä, T., Miettunen, J., Isohanni, M., Rubinstein, K., Feldman, Y., Grasa, E., Corripio, I., Berdun, J., D'Amico, E., M-RESIST Group, & Bulgheroni, M. (2019). Mobile Phone and Wearable Sensor-Based mHealth Approaches for Psychiatric Disorders and Symptoms: Systematic Review. *JMIR Mental Health*, 6(2), e9819. <https://doi.org/10.2196/mental.9819>
- 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>

- Sierra, M., Medford, N., Wyatt, G., & David, A. (2012). Depersonalization disorder and anxiety: A special relationship? *Psychiatry Research*, *197*, 123–127. <https://doi.org/10.1016/j.psychres.2011.12.017>
- Simeon, D. (2004). Depersonalisation Disorder: A Contemporary Overview. *CNS Drugs*, *18*(6), 343–354. <https://doi.org/10.2165/00023210-200418060-00002>
- Simeon, D., Giesbrecht, T., Knutelska, M., Smith, R. K., & Smith, L. (2009). Alexithymia, Absorption, and Cognitive Failures in Depersonalization Disorder. *Journal of Nervous and Mental Disease*, *197*(7), 492–498. <https://doi.org/10.1097/nmd.0b013e3181aaef6b>
- Simeon, D., Spiegel, D., & Friedman, D. (2021). Approach to treating depersonalization/derealization disorder. *UpToDate*. Retrieved June 18, 2023, from. <https://www.uptodate.com/contents/approach-to-treating-depersonalization-derealization-disorder/print>
- Singh, A. (2021). An Introduction to Experimental and Exploratory Research. *Social Science Research Network*. <https://doi.org/10.2139/ssrn.3789360>
- Somer, E., Amos-Williams, T., & Stein, D. J. (2013). Evidence-based treatment for Depersonalisation-derealisation Disorder (DPRD). *BMC Psychology*, *1*(1), 20. <https://doi.org/10.1186/2050-7283-1-20>
- Spiegel, D., Loewenstein, R. J., Lewis-Fernández, R., Sar, V., Simeon, D., Vermetten, E., Cardeña, E., & Dell, P. F. (2011). Dissociative disorders in DSM-5. *Depression and Anxiety*, *28*(9), 824–852. <https://doi.org/10.1002/da.20874>
- Spitzer, C., Barnow, S., Freyberger, H. J., & Grabe, H. J. (2006). Recent developments in the theory of dissociation. *World Psychiatry*, *5*(2), 82. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1525127/>
- Stapelton, J. (2018). *How to Find & Document Grey Literature*. University of Waterloo. https://guides.library.utoronto.ca/ld.php?content_id=34461131.
- Subramanyam, A. A., Somaiya, M., Shankar, S., Nasirabadi, M., Shah, H., Paul, I., & Ghildiyal, R. (2020). Psychological interventions for dissociative disorders. *Indian Journal of Psychiatry*, *62*(8), 280. https://doi.org/10.4103/psychiatry.indianjpsychiatry_777_19
- Sutar, R., & Sahu, S. (2019). Pharmacotherapy for dissociative disorders: A systematic review. *Psychiatry Research-neuroimaging*, *281*, 112529. <https://doi.org/10.1016/j.psychres.2019.112529>

- Tricco, A., Lillie, E., Zarin, W., O'Brien, K., Colquhoun, H., Levac, D., Moher, D., Peters, M., Horsley, T., Weeks, L., Hempel, S., Akl, E., Chang, C., McGowan, J., Stewart, L., Hartling, L., Aldcroft, A., Wilson, M., Garritty, C., & Straus, S. (2018). PRISMA extension for scoping reviews (PRISMA-ScR): Checklist and explanation. *Annals of Internal Medicine*, 169. <https://doi.org/10.7326/M18-0850>
- Tyndal, J (2010). *The AACODS checklist is designed to enable evaluation and critical appraisal of grey literature*. <https://fac.flinders.edu.au/dspace/api/core/bitstreams/e94a96eb-0334-4300-8880-c836d4d9a676/content>
- Van Heugten-van Der Kloet, D., Merckelbach, H., Giesbrecht, T., & Lynn, S. J. (2012). Fragmented Sleep, Fragmented Mind. *Perspectives on Psychological Science*, 7(2), 159–175. <https://doi.org/10.1177/1745691612437597>
- Van Heycop ten Ham, B., Hulsbergen, M. & Bohlmeijer E. (2014). Introductie. In: B. Heycop ten Ham, M. Hulsbergen & E. Bohlmeijer. (red). *Transdiagnostische factoren. Theorie en praktijk* (pp. 15-41). Amsterdam: Boom.
- Watson, O. (2022). Embodying the (Dis)embodiment: Narrating Depersonalization-Derealization Disorder. *Qualitative Health Research*, 32(12), 1858–1864. <https://doi.org/10.1177/10497323221123763>
- Weintraub, M. J., Ichinose, M., Zinberg, J., Done, M., Morgan-Fleming, G., Wilkerson, C. A., Brown, R. D., Bearden, C. E., & Miklowitz, D. J. (2022). App-enhanced transdiagnostic CBT for adolescents with mood or psychotic spectrum disorders. *Journal of Affective Disorders*, 311, 319–326. <https://doi.org/10.1016/j.jad.2022.05.094>
- Wohlin, C., Kalinowski, M., Felizardo, K. R., & Mendes, E. (2022). Successful combination of database search and snowballing for identification of primary studies in systematic literature studies. *Information & Software Technology*, 147, 106908. <https://doi.org/10.1016/j.infsof.2022.106908>
- World Health Organization. (2016). International statistical classification of diseases and related health problems (10th ed.). <https://icd.who.int/browse10/2016/en>
- World Health Organization. (2019). International statistical classification of diseases and related health problems (11th ed.). <https://icd.who.int/>
- Xie, Q., Torous, J., & Goldberg, S. B. (2022). E-Mental Health for People with Personality Disorders: A Systematic review. *Current Psychiatry Reports*, 24(10), 541–552. <https://doi.org/10.1007/s11920-022-01360-1>

- Yang, J., Millman, L. S. M., David, A. S., & Hunter, E. C. M. (2022). The Prevalence of Depersonalization-Derealization Disorder: A Systematic Review. *Journal of Trauma & Dissociation*, 24(1), 8–41. <https://doi.org/10.1080/15299732.2022.2079796>
- Yttri, J., Urfer-Parnas, A., & Parnas, J. (2020). Auditory Verbal Hallucinations in Schizophrenia. *Journal of Nervous and Mental Disease*, 208(9), 689–693. <https://doi.org/10.1097/nmd.0000000000001179>
- Zwerenz, R., Becker, J. U., Johansson, R., Frederick, R. J., Andersson, G., & Beutel, M. E. (2017). Transdiagnostic, Psychodynamic Web-Based Self-Help Intervention Following Inpatient Psychotherapy: Results of a Feasibility Study and Randomized Controlled Trial. *JMIR mental health*, 4(4), e41. <https://doi.org/10.2196/mental.7889>

Appendix

Appendix A

Table 1

The three grey literature search strategies

Strategy 1. Targeted Website Browsing/Searching (I.e. search 1 website at a time)				
Date	Organization name	URL		# of items screened (uploaded to citation management software)
	Ex. Public Health Ontario	Ex. https://www.publichealthontario.ca/en/Pages/default.aspx		Ex. 3
Strategy 2. Grey Literature Database Search				
Date	Database name & URL	Search strategy(s)/ searched including (if applicable) how items were selected.	# of items words retrieved/ results	# of items screened (uploaded to citation management software)
	Ex. <i>ClinicalTrials.Gov</i> & https://clinicaltrials.gov/	Ex. <i>Search strategies:</i> 1) Alzheimer's Disease and Canada. 2) Alzheimer Disease and Canada <i>Selection:</i> <i>All results retrieved in the search were reviewed for relevance by 1 reviewer, 3 items were selected for screening.</i>	Ex. <i>Search Results:</i> <i>181</i> <i>3</i>	Ex. <i>Items Screened:</i> <i>3</i> <i>0</i>

Table 3 (continued)

 Strategy 3. Search Engine Searching (Google.ca, DuckDuckGo.com)

Date	Search engine <i>Ex. Google.ca</i>	Search strategy(s) including how items were selected	# of items screened (uploaded to citation management software)
		<i>Ex. Search strategies:</i> 1) <i>Wind turbines and sleep</i> 2) <i>Wind-powered electrical generators and sleep</i> <i>Selection: Items were selected by scanning the first 100 results from each search</i>	<i>Ex. Items Screened:</i> 1. 3 2. 2

Note. Depending on whether it was a website, gray literature database or search engine, either strategy 1, 2 or 3 was chosen. The full explanation of the strategies can be found in the original document. Adapted from " How to Find & Document [Grey Literature](#) " by J. Stapelton, 2018, liaison librarians, University of Waterloo, (https://guides.library.utoronto.ca/ld.php?content_id=34461131). Copyright 2018 by the University of Waterloo.

List of abbreviations

Abbreviation	Definition
CBT	Cognitive-behavioral therapy. <i>A form of therapy where thoughts, emotions, and behavior are interrelated.</i>
DDD	Depersonalization-derealization disorder. <i>A dissociative disorder based on the DSM-5 classification. Depersonalization and derealisation are core elements.</i>
DID	Dissociative Identity disorder. <i>A dissociative disorder, in which a person has two or more identities/states, formerly known as multiple identity disorder in the versions before the DSM-IV.</i>
DP	Depersonalization. <i>A phenomenon in which a person is detached from the self.</i>
DPD	Depersonalization disorder. <i>A dissociative disorder based on the DSM-IV/DSM-IV-TR classification. Depersonalization was the core element.</i>
DD	Dissociative disorders. <i>The five dissociative disorders.</i>
DSM-IV	Diagnostic and statistical manual of mental disorders (4th edition). <i>A reference handbook for mental disorders.</i>
DSM-IV(-TR)	Diagnostic and statistical manual of mental disorders (4th edition, text revision). <i>A reference handbook for mental disorders.</i>
DSM-5	Diagnostic and statistical manual of mental disorders (5th ed.). <i>A reference handbook for mental disorders.</i>
eHealth	Electronic Health. Any form of technological intervention targeting health complaints. Specifically, in the present thesis, mental health.